

RELATIONSHIPS BETWEEN BODY IMAGE,
MOTIVATION AND PHYSICAL EDUCATION (PE)
EXPERIENCES IN 13-14 YEAR OLD BOYS AND GIRLS

C.L.KERNER

Ph.D

2013

UNIVERSITY OF BEDFORDSHIRE

RELATIONSHIPS BETWEEN BODY IMAGE, MOTIVATION
AND PHYSICAL EDUCATION (PE) EXPERIENCES IN 13-14
YEAR OLD BOYS AND GIRLS

by

Charlotte Lynn Kerner

A thesis submitted to the University of Bedfordshire in partial
fulfilment of the requirements for the degree of Doctor of Philosophy

July 2013

RELATIONSHIPS BETWEEN BODY IMAGE, MOTIVATION AND
PHYSICAL EDUCATION (PE) EXPERIENCES IN 13-14 YEAR OLD BOYS
AND GIRLS

C.L.KERNER

ABSTRACT

Research has established that body image disturbance is associated with a number of negative physical and psychological health outcomes. It is recognised that body image is subject to situational variability, yet to date, research seems to have overlooked the explicit exploration of the stability of the construct within physical education. With this in mind the overarching aim of this thesis was to explore relationships between body image, perceptions of competence and motivation, with specific attention paid to the influence of the physical education environment upon year nine boys and girls situational body satisfaction. Secondly, the thesis explores the role that these three psycho-social constructs play in transfer of learning.

The design of the research was a correlational, repeated measures study conducted across two time points, combined with focus group sessions. Quantitative data collection at time point one consisted of 620 pupils from 37 year 9 physical education classes. Time point two consisted of 461 pupils from 38 physical education classes. At both quantitative time points students responded to a questionnaire package which explored perceptions of competence towards physical education, motivation for physical education and aspects of trait and state body image. Participants at time point one also provided demographic information. Additionally, 159 pupils at time point one underwent anthropometric assessments of body fat and BMI.

The findings from the thesis identify that 71%-80% of year 9 boys and girls are dissatisfied with their current body size. It was identified that the majority of

variance in situational body satisfaction within physical education can be attributed to factors operating at the pupil and time level, with a smaller yet significant proportion of variance being attributed to between-class factors. Lesson content did not significantly predict variations in body satisfaction scores within physical education and evidence from the focus group sessions suggest that classroom entry factors such as the changing rooms maybe more influential than factors operating within the lesson itself. Results revealed higher levels of body satisfaction within physical education are associated with higher perceptions of competence within physical education, higher levels of autonomous towards physical education, higher transfer of learning scores and lower amotivation towards physical education scores. Collectively, the results of the thesis identify the prevalence of body dissatisfaction in 13-14 year old boys and girls and the potential implications negative body satisfaction can have for experiences of physical education. Findings of the thesis warrant further investigation of how the psychological variables explored relate to further contextual and pedagogical factors.

DECLARATION

I declare that this thesis is my own unaided work. It is being submitted for the degree of

Doctor of Philosophy at the University of Bedfordshire.

It has not been submitted before for any degree or examination in any other University.

Name of candidate: Charlotte Lynn Kerner

Signature:

Date:

TABLE OF CONTENTS

ABSTRACT.....	ii
TABLE OF CONTENTS.....	v
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF CONFERENCE PRESENTATIONS	xii
LIST OF PLANNED PUBLICATIONS.....	xiii
Chapter 1: Introduction.....	1
1.1 The Wider Context: An Appearance Focused Society	2
1.2 The Media, Obesity Discourse and Body Image Concerns	3
1.2 The School Context and the Body: Personal Reflections	6
1.3 Structure of the Thesis	9
Chapter 2: Literature Review.....	11
2.1 Introduction.....	11
2.2 Defining the Population	11
2.3 Body Image	11
2.3.1 Conceptualising Body Image.....	12
2.3.2 Conceptual Perspectives on Body Image Construction	14
2.3.3 Prevalence of Body Image Disturbance.....	16
2.3.4 Consequences of Body Image Disturbance: Health Behaviours and Psychological distress	19
2.4 Body Image in Physical Education	24
2.4.1 Pupil Level Predictors of Body Image Disturbance within Physical Education	25
2.4.3 Class level predictors of body image disturbance within Physical Education .	27
2.5 Motivation.....	34

2.5.1 Self Determination Theory.....	35
2.5.2 Self Determination Theory and Physical Education	38
2.5.3 Body Image and Motivation	43
2.6 Perceptions of Competence.....	45
2.6.1 Perceptions of Competence in Physical Education	46
2.6.2 Perceptions of Competence and Body Image	46
2.7 Physically Active Lives: The Role of Physical Education.....	47
2.7.1 Physical activity recommendations in youth.....	47
2.7.2 Health benefits of physical activity.....	48
2.7.3 Current levels of Physical activity in youth	51
2.6.5 The role of physical education in encouraging an active lifestyle	52
Chapter 3: Research Questions	56
Chapter 4 Research Methodology	59
4.1 Introduction.....	59
4.2 Research Design.....	59
4.3 Research Context	63
4.3.1 The Schools.....	63
4.3.2 The Participants	65
4.4 Research Methods and Procedures	69
4.4.1 Body Image Assessment	69
4.4.1.1 Rationale for the selection of body image assessment tools	69
4.4.1.2 Trait measures methods	71
4.4.1.3 State measures methods	72
4.4.2 Self Determination Theory.....	72
4.4.2.1 Rationale for the use of motivation questionnaire	72
4.4.2.2 Motivation methods	73
4.4.3 Perceptions of Competence.....	73
4.4.3.1 Rationale for Perceptions of Competence Subscale.....	73
4.4.3.2 Methods for assessing perceptions of competence	74
4.4.4 Transfer of Learning	74
4.4.5 Lesson Content.....	74

4.4.6 Anthropometric Measures.....	75
4.3.6.1 Height.....	75
4.4.6.2 Body Mass	75
4.4.6.3 Body Mass Index	75
4.4.6.4 Body Composition	75
4.4.7 Demographic variables	75
4.4.8 Focus groups	76
4.4.8.1 Rationale for Focus Groups	76
4.4.8.2 Focus Group Methods.....	76
4.5 Reflexive Methodological Limitations	78
Chapter 5: The Descriptive Characteristics of Trait Perceptual and Attitudinal Body	
Image Disturbance in Year 9 Boys and Girls	81
5. 1 Introduction.....	81
5.2 Methods.....	82
5.2.1 Participants and Procedures	82
5.2.2 Measures	82
5.2.3 Statistical Analysis.....	83
5.3 Results.....	83
5.4 Discussion	86
5. 5 Conclusion	88
Chapter 6: The Distribution of Body Image Satisfaction within Year 9 Physical Education	
and Relationships with Physical Education Lesson Content.	90
6.1 Introduction.....	90
6.2 Methods.....	92
6.2.1Participants and Procedures	92
6.2.2 Measures	94
6.2.3 Statistical Analysis.....	94
6.3 Results.....	95
6.4 Discussion	97
6.5 Conclusion	106

Chapter 7: Associations between Students' Body Satisfaction within Physical Education and Anthropometric and Demographic Variables.....	107
7.1 Introduction.....	107
7.2 Methods.....	108
7.2.1 Participants and Procedures	108
7.2.2 Measures	109
7.2.3 Statistical Analysis.....	110
7.3 Results.....	111
7.4 Discussion.....	116
7.5 Conclusions.....	119
Chapter 8: Body satisfaction within physical education and associations with perceptions of competence and motivation for physical education.....	120
8.1 Introduction.....	120
8.2 Methods.....	122
8.2.1 Participants and Procedures	122
8.2.2 Measures	123
8.2.3 Statistical Analysis.....	123
8.3 Results (Part one).....	124
8.4 Results (Part Two)	132
8.5 Discussion.....	136
8.6 Conclusion	138
Chapter 9: Transfer of learning and associations with perceptions of competence, body satisfaction and motivation in physical education	139
9.1 Introduction.....	139
9.2 Methods.....	141
9.2.1 Participants and Procedures	141
9.2.3 Statistical Analysis.....	143
9.3 Results.....	144
9.4 Discussion.....	148
9.5 Conclusion	153

Chapter 10: Overall Discussion	154
10.1 Introduction.....	154
10.2 An Overview of the findings of the study	154
10.3 Overall practical Implications	157
10. 4 Limitations	158
10.4 Future Research Directions	161
Chapter 11: Conclusions	164
11.1 Reflections upon the significance of personal and situational factors	164
11.2 Links between the findings and the bodies around me	168
11.3 Final Remarks	171
APPENDICIES	173
APPENDIX A: Demographic Information	173
APPENDIX B: Transfer of Learning Question	174
APPENDIX C: Behavioural Regulation in Physical Education Questionnaire	175
APPENDIX D: Adapted version of the Body Image States Scale.....	176
APPENDIX E: The perceived competence subscale of the Intrinsic Motivation Inventory.	178
APPENDIX F: The BMI-based Silhouette Matching Test	179
APPENDIX G: Focus Group Guiding Questions	180
REFERENCES	181

LIST OF TABLES

Table 1: The breakdown of physical education classes by lesson content for all pupils, single sex male classes, single sex female classes and co-educational classes at time point 1 (T1)	67
Table 2: The breakdown of physical education classes by lesson content for all pupils, single sex male classes, single sex female classes and co-educational classes at time point 2 (T2)	68
Table 3: A table to highlight the breakdown of lesson contents into coding categories at time point 1 (T1) and time point 2 (T2).....	74
Table 4: Non directional discrepancy scores between current and ideal BMI, in all participants, boys and girls	84
Table 5: Levels of trait body satisfaction and direction of body image disturbance in boys and girls.....	85
Table 6: A table to highlight the breakdown of lesson contents across time points	93
Table 7: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to lesson content, whilst controlling for time and sex.	96
Table 8: Means of Body Image State Scale Scores as a function of lesson content and sex	97
Table 9: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to percent body fat and BMI.....	112
Table 10: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to demographic variables and after controlling for percent body fat.	115
Table 11: Summary of model estimates for the two level analysis of perceptions of competence scores in relation to body image state scale scores	125
Table 12: Summary of model estimates for the two level analysis of autonomous motivation scores in relation to body satisfaction within physical education.....	127
Table 13: Summary of model estimates for the two level analysis of controlled motivation scores in relation to body satisfaction within physical education	129
Table 14: Summary of model estimates for the two level analysis of amotivation scores in relation to body satisfaction	131
Table 15: Summary of model estimates for the two level analysis of autonomous motivation scores in relation to perceptions of competence	133
Table 16: Summary of model estimates for the two level analysis of controlled motivation scores in relation to perceptions of competence	134
Table 17: Summary of model estimates for the two level analysis of amotivation scores in relation to perceptions of competence	135
Table 18: Summary of Multilevel Analysis Exploring Relationships with Transfer of Learning.	147
Table 19: Summary of model estimates for the two level analysis of transfer of learning scores in relation body fat	148

LIST OF FIGURES

Figure 1: A Figure to highlight the conceptualisation of body image (disturbance) and its associated components.....	13
Figure 2 A cognitive-behavioural model of body image development and experiences (Cash, 2002a).....	15
Figure 3: A continuum of self determination in relation to motivation	36
Figure 4: A figure to highlight the samples obtained at each time point and the corresponding chapter in which the data was used.	66

LIST OF CONFERENCE PRESENTATIONS

Information from the thesis has been presented at a number of conferences and seminars, as detailed below.

Kerner, C., Haerens, L., Kerr, C., and Kirk, D. (2013) *Motivation for physical education, perceptions of competence and relationships towards transfer towards physical activity in leisure time*. International Society for Behavioural Nutrition and Physical Activity, Ghent, May 2013

Kerner, C., Haerens, L., Kerr, C and Kirk, D. (2011). *The distribution of body image disturbance in physical education: within and between class variance*. Paper presented at the British Educational Research Association's National Conference, Institute of Education, London, UK, September 2011.

Kerner, C., Kerr, C., Haerens, L., and Kirk, D. (2011) *Relationships between body image, motivation and physical education experiences in 13-14 year old boys and girls*. Poster presented at The University of Bedfordshire annual Conference 'Outcomes and Impacts', Luton, July 2011

Kerner, C., Haerens, L., Kerr, C., and Kirk, D. (2011). *Body Image and physical activity in adolescents: The influence of socioeconomic status, ethnicity and sex*. Poster Presented at the Association Internationale des Ecoles Superieures d'Education Physique (International Association for Physical Education in Higher Education) conference, University of Limerick, Ireland, June 2011.

Kerner, C., Haerens, L., Kerr, C., and Kirk, D. (2011). *Relationships between body image and physical education experiences in adolescents*. Paper presented at the Inaugural exchange seminar between The University of Birmingham, University of Ghent and The University of Bedfordshire, University of Ghent, February 2011.

LIST OF PLANNED PUBLICATIONS

It is anticipated that this thesis will directly produce approximately four research papers (detailed below). It is expected that these papers will be submitted to either mainstream psychological journals or to multidisciplinary sport journals such as research quarterly. Moreover, there is the potential for a publications to be constructed based upon the methodologies associated with the assessment of the body within physical education and also the wider concept of the body within education.

Kerner, C., Haerens, L., Kerr, C., and Kirk (2013). *Relationships between trait body satisfaction and anthropometric and demographic variables*

Kerner, C., Haerens, L., Kerr, C., and Kirk (2013). *Relationships between Physical Education Lesson Content and Body Satisfaction in Year 9 Boys and Girls*

Kerner, C., Haerens, L., Kerr, C., and Kirk (2013). *Associations between Students Body Satisfaction and Perceptions that Physical Education Stimulates an Active Lifestyle Beyond the School Day.*

Kerner, C., Haerens, L., Kerr, C., and Kirk (2013). *Relationships between Body Image, Perceptions of Competence and Motivation for Physical Education: A Self Determination Theory Approach*

Acknowledgements

There are a number of people that I would like to thank for their support during the process of my PhD. Firstly, my appreciation goes to Eileen Alexander for funding the production of the PhD. Secondly, I would like to extend my appreciation to all four participating schools and the key contact people at each school for their support in allowing my access to the pupils. With this in mind I would like to also thank all of the pupils that took part in the study.

The support received from my supervisory team has been such that I now find myself on a path of increased self confidence and self belief. Firstly, I would like to thank Professor David Kirk for his guidance throughout this process, without which I do not believe that I would have developed in the way that I have, both academically and personally. Also I am extremely grateful for the support received from my second supervisor Dr Catherine Kerr and my external supervisor Prof. Dr Leen Haerens; their insights and support during this PhD have been invaluable.

To all of those in the postgraduate office that have supported me along the way, particularly I owe thanks to Sarah Denton, Inge Hermann and Louise Douse for their encouragement and our shared lunch breaks. Also, to Helen Ives, my fellow Essex girl, for providing me with lots of laughs along the way; my particular favourite being the 'Tsukuba Surprise'. I would also like to express my gratitude to the members of the PESP research group, many of which have provided me with help and encouragement during the PhD process. My gratitude must also be extended to Dr Amanda Jones, for encouraging me as an undergraduate to embark on this journey.

Finally, I would like to thank my family for their direction and support during my many years of study. My thanks go to my siblings, Mark, Lee, Darren, Craig and Amber for providing me with different, yet complimentary modes of support during my time in Bedford. My special thanks go to Amber and Craig for their emotional support during this time, their belief in my ability to succeed has been

one of the major things pushing me forward during my studies. Thank you must be extended to my Mum and Dad for their repeated trips back and forth from Southend to Bedford on childcare duties during half terms, conference attendances and field work commitments.

Finally, I would like to dedicate this thesis to my son Jack. After moving to Bedford on our own seven years ago, you have always been right beside me supporting my quest for something more. Your sacrifices, resilience, love and support has driven me through the really tough days and I know that I wouldn't have got to this point without you standing next to me.

Chapter 1: Introduction

It is widely accepted that physical education can be a vehicle through which to establish physical activity in the leisure time setting and throughout the lifespan (Puhse & Gerber, 2005). This premise is set within the context of a society in which there is increased emphasis placed upon physical appearance and subsequent increased value associated with those individuals that conform to socially constructed ideas of physical attractiveness. This thesis will explore the psychological factors and mechanisms within physical education that have the potential to explain the processes underlying physical education's role in encouraging physical activity beyond the school day. This will be done by exploring relationships between body image, motivation and perceptions of competence within physical education, using Self Determination Theory as a guiding framework.

This introduction will present to you the wider context of the thesis, by this I mean this section will provide an overview of the society in which the participants inhabit; one which places heavy focus and value upon the attainment of a certain type of socially constructed ideal of physical attractiveness. The introduction will seek to merge the experiences of myself (being also actively under pressure from such ideals) with literature which provides empirical support for my own experiences and the experiences of 'real life' people living in an appearance focused society. Although the focus of the thesis is not based upon my own experiences, integrating my own experiences into the introduction will hopefully provide you with a sense of the personal importance of this thesis and set the scene for how and why issues concerned with the way we look have the potential to influence anyone at any time in their life. I am no longer a 13 or 14 year old adolescent, as is the focus of this thesis, but still every day consciously and unconsciously engage in practices and strategies to manage my identity within an appearance focused society.

Firstly, the introduction will address how messages of physical attractiveness are delivered to individuals. This will be done by initially addressing the discourse of obesity and the potential implications this may have for fuelling body image

concerns. Secondly, the impact of popular culture and the media will be explored. Following this a more directed, specific focus on the context of the school environment will be explored. The final section in the introduction will outline the structure of the thesis.

1.1 The Wider Context: An Appearance Focused Society

Upon embarking on the PhD process I remember vividly standing in the school playground waiting to collect my son from school, discussing with another parent how her 5 year old child would not eat her school lunch because of her fear of getting fat. I remember feeling horrified that such a young child had established the link between food, her body and others perceptions of her body. As a woman in her late 20's I of course had engaged in dialogue of a similar nature, so much so that such dialogues with myself had become normalised, much like brushing my teeth or combing my hair. Similar dialogues were exchanged between me and my friends, so it must be 'normal' to think this way if everyone else is doing it too? I also see my teenage nieces with similar firmly established patterns of body monitoring and 'fat talk' and I remember back to the difficult and demanding times associated with changes in my body and feelings towards my body during adolescence. My thoughts turn to that 5 year old girl and her already established negative perceptions of her body and emerging coping strategies to deal with the external pressures of obtaining a body that her peers may find socially acceptable. What happens when that child develops into a young lady, when she hits the transition period into adolescence, when she is likely to experience shifts in her biological, cognitive and emotional development? How is she going to feel about her body during maturation? How will her feelings towards her body influence her behaviours? And how can the environments in which she engages in either alleviate or foster such concerns? It is with these tentative questions in mind and having ironically just entered the fat and calorie content of my lunch into a popular online diet tracking application (Weight Watchers¹) that the thesis begins.

¹ Weight Watchers is an international company that offers weight loss products and services.

1.2 The Media, Obesity Discourse and Body Image Concerns

Obesity is consistently presented in the literature as an issue of major concern for health and longevity and subsequently of great public health concern in most western countries. Not only are the issues of obesity and the apparent ‘epidemic’ presented through the academic literature but the media act as a vehicle through which information is relayed to the general public. Although body image concerns, like obesity related issues, also have major implications for a number of physical and psychological outcomes (as discussed in chapter 2), the direct presentation of these issues in the media are not as prominent. Instead the dominant messages portrayed to the public are the threats associated with the overweight and obese body, yet the threat messages regarding the disordered eating body are almost invisible. Evans *et al.*, (2008) note that the ‘threats’ associated with overweight and obesity that are portrayed through the media are not the result of direct research but more so ‘expert’ opinions. The authors do not disclaim that there may be relationships between obesity and increased mortality, however, what is brought into question is the discourse associated with obesity. The authors suggest that it is not a discourse associated with health but a discourse of weight and appearance. This can have clear implications for issues related to body image concerns if individuals are bombarded with media messages regarding obesity that are linked to issues of body weight. It has been suggested that there are links between obesity discourse and eating disorder discourse and ‘how the language of one (the obesity discourse) can bleed into the other’ (Cliff and Wright, 2010, pg 222). Evans *et al.*, (2008, pg 101) reinforce this notion by claiming ‘through the mediation of “obesity discourse” a ‘cult of slenderness’ is indirectly portrayed. It is proposed that the mechanisms by which thinness equates to health can be equally as influential as messages which propose beauty is associated with thinness, but for the former it is underpinned by ‘negative force because it is sanctioned by medicine and has moral overtones’ (Halse *et al.*, 2008, pg 129). Thus, it seems that the relatively invisible issue of body image disturbance may actually be fuelled by the dominant media presentation of a discourse associated with weight.

Two issues have been addressed here; firstly the relative invisibility of body image and eating disorder related concerns in the media, in comparison to messages presented regarding obesity. Secondly, the impact of potential media messages regarding obesity on levels of body image disturbance. This may suggest that body image concerns are of a lesser health importance than issues related to obesity; however, as will be presented in the literature review later in this thesis, the health implications for holding a negative perception of the body or being dissatisfied with the body are vast. Yet, it appears that issues relating to body image concerns are consistently being overlooked in favour a prominent discourse of the threats associated with obesity. This suggests that body image concerns may be heightened by the media messages put forth and provides an insight into the context in which this thesis is set.

Firstly, I propose an examination of the messages that we are constantly bombarded with regard to the kind of body that we are expected to possess. The previous paragraphs have put forth the proposition that an ‘overweight’, ‘obese’ or ‘fat’ body does not hold value for an individual in society. Whether it is through mechanisms of health or weight, the fat body is delivered through the media as undesirable and belonging to a lazy owner. A young person can turn on the television and be presented with the television programme currently broadcast on Channel 4 called ‘Secret Eaters’². The makers of this programme inform the viewer that this programme is a ‘groundbreaking series about the psychology and science of eating scrutinises the eating habits of overweight families by putting them under 24-hour camera surveillance’. Another television show that is also broadcast in the UK is entitled ‘embarrassing fat bodies’³, with the description of the show being described as follows; ‘As the nation’s waist size spirals out of control, the Embarrassing Bodies doctors help the seriously overweight cope with illnesses caused by obesity’. Also another television show highly accessible to children and adolescents in the UK is ‘The biggest loser’⁴ on ITV which is a ‘series where a group of overweight people are challenged to embark on a life-

² Secret Eaters is a programme broadcast on Channel 4 in the UK.

³ Embarrassing bodies is a Channel 4 programme broadcast in the UK, that seeks to de-stigmatise embarrassing body parts.

⁴ The biggest Loser is a British reality programme broadcast on ITV,

changing journey of nutrition and exercise as they try to return to a healthy weight'. These television shows provide us with the contemporary context in which our participants inhabit, once in which according to secret eaters the sins of 'being overweight are so bad that these deviant individuals require surveillance, or the 'fat' body is so embarrassing that it needs a whole show devoted to it or according to 'The biggest loser' weight loss can be life changing. On the other hand, the prominence of television programmes that focus on eating disorders is not as obvious and almost comparatively invisible.

But surely all the messages that we receive via television are not all associated with the deviance of overweight? How about 'How to look good naked'⁵ with Gok Wan⁶, Channel 4 says this is 'the inspirational fashion series that shows women how to look fantastic with their clothes on or off no matter what their body shape - and all without a surgeon's scalpel in sight...'. At first sight, we may perceive this as refreshing, for Gok doesn't mind what body shape we have, he doesn't want us surgically enhanced (apparently) but watching this program this isn't the message that I get. Gok seems to have an over fascination with obtaining an hourglass figure for his 'subjects', slipping them in their control underwear to banish the bulges, remove inches and giving them a beauty makeover which makes them somewhat unrecognisable. It may be argued that this approach is less damaging to the audience as he is far from promoting the generic media messages of the slim figure but I argue that he is still presenting to the audience the image of something unobtainable. My perception of this show is that it is OK to be fat as a woman, as long as the fat is distributed in the right areas; a small defined waist with voluptuous chest and hips. These television programmes highlight the messages that young people receive when they switch on the television; telling them that their bodies should look a certain way or be a certain shape in order to not be classed as deviant and to be deemed physically attractive.

These are just a glimpse at the overt media messages displayed through television, telling us how our bodies should look. There is another form of media

⁵ 'How to Look Good Naked' is a programme broadcast on channel 4 focused around getting women to feel good about their bodies by wearing suitable clothing.

⁶ Gok Wan is the presenter of the programme 'How to Look Good Naked'

which also informs us about how our bodies should look, these are magazines, particularly those widely available to young females and the ‘celebrity’ culture delivered through them. There is rarely a time when you can look at the magazine stand and not see images of ‘bikini bodies’, weight loss, weight gain or the dreaded red circle around the cellulite. I get confused but I think they tell us that it is OK to be slim or ‘curvy’, but definitely not OK to be overweight. Let us think about fashion magazines, or music videos or fashion models, or the cosmetic surgery culture... the list is endless but all deliver the same generic messages to us; slim is good, fat is bad (unless for a woman, the fat is distributed in such a way that is makes us sexually appealing).

We can see that alongside the context of the obesity discourse, the participants of the study are set within the context of an appearance focused society, where value is attributed and rewarded to certain bodies that abide to socially constructed ideals of physical attractiveness. Thus, the previous arguments put forth how ‘risks’ maybe associated with the obese body and in contrast how also certain rewards could be obtained by individuals that posses a slim body. The next section of this introduction will explore this appearance focused, obesity fearing society in the context of my own personal experiences of my body at school.

1.2 The School Context and the Body: Personal Reflections

The previous section proposed that the notion of body image is almost invisible within the media when compared with the representation of obesity via the media, particularly in reference to child and adolescent populations. It may be argued that this is also a pattern that we see reflected with the academic literature. When we begin to explore notions of health particularly within the school context, we are often presented with an abundance of research telling us the fundamental role that the school and more specifically physical education has in alleviating the obese body yet the disturbed body does not receive so much attention. This section will seek to explore my own personal experiences of my body within school, which will provide the personal context for which this thesis developed.

I have several vivid memories from my time as an adolescent that relate to times in which I experienced episodes of major insecurity regarding my body. Looking

back and recollecting it has become apparent to me that most of these strong memories that I have occurred within school and furthermore the majority of these strong vivid memories that I have of such situations were situated in the context of physical education. Firstly, my recollections take me to the feeling that I was always one of the 'fat' girls at school. Although I engaged in far more sporting activities than most of the other people in my year group I always had this strong sense of being fat. I am not exactly sure how accurate my perceptions were at the time because now looking back now and with the benefit of social media such as Facebook I have (ironically) engaged in further social comparisons of my body with the peers. I now have the perception that my body weight is probably not very different from theirs and now from a somewhat questionable objective perspective I would consider myself to be somewhere in the middle of the weight spectrum when compared with my peers, however, at school I firmly situated myself at the 'fat' end of the continuum. This firstly brings about a number of issues I would like to address. Was I 'normal' for thinking this way? And did my peers also have a distorted perception of their bodies? These are questions that I hope I will gain answers to through the review of literature and also some of my own empirical research and something which I will later revisit in the conclusion section of the thesis.

Alongside my enduring perceptions of being the fat girl at school, I also remember another time in which I experienced, what I shall describe as, an occurrence of major body image disturbance. This was in a science lesson, in year 10 (I remember it well, as I can exactly picture the room, like it was yesterday). We were learning about Body Mass Index (BMI) and we all had to measure and weigh ourselves. I remember, at the time trying to move myself down the queue to the other pupils that I knew would weigh a lot more than me. Maybe this was my coping mechanism for what I can only describe as the horrific situation I was about to endure...standing on the scales! I don't remember learning about the periodic table or photosynthesis, but I have such an enduring distinct memory of that 1 hour science lesson. Why? Because as an adolescent it was so very horrifying for me to undergo such public social comparisons of my body weight. Now this may appear to be an obvious situation in which a young person would

experience such reactions to their body and even now standing in front of my peers and standing on the scales would fill me with dread.

Now my recollections turn to other memories I have of situations in which I experienced other episodes of body insecurity at school and besides from the overwhelming, enduring perception that I was one of the fat girls and the traumatic science lesson in which we all had to stand on the dreaded scales all of my other memories are concerned with physical education. Memories from trying to position myself in swimming lesson next to girls that I thought were ‘fatter’ than myself, in order to cope with the demands of my body being on display, or wearing shorts under my lycra netball outfit to try and limit the amount of body that was exposed, memories of wearing two sports bras and wearing the biggest top that they sold in order to conceal my body. Memories of feeling lucky for being one of the high status girls in physical education that meant we always had status in the changing room to get changed in the area which was hidden by a wall. Memories of sitting petrified on the pool side, hoping the teacher would hurry up and stop talking to let us get in the water, away from the prying eyes of social comparison. The list is endless. Maybe I was one of the ‘lucky’ girls too, I never once bought in a note to say I couldn’t take part, but lots of other people did and maybe this was their strategy of coping with the week in week out demands of negotiating the body with physical education. Was I lucky that my combination of feeling fat was teamed with feelings of physical competence? Were the experiences of those who felt ‘fat’ and incompetent even worse? These are some of the questions that come to mind when I begin to recollect.

The introduction has integrated the context that the participants inhabit, alongside my own personal reflections of the space in which my body inhabited within physical education. By integrating these two components I hoped to have presented to you not only the research context and the research importance of a study of this nature, but also the personal importance of the investigation. I will seek to explore through my thesis if these experiences are of a unique, personal nature and therefore only applicable to a minority of pupils or if this is a common shared experience amongst pupils within physical education. This is something I

will revisit and reflect upon in the conclusion section of this thesis. The next section will present to you the structure of my thesis.

1.3 Structure of the Thesis

The thesis is structured into eleven chapters. This chapter is chapter one and has presented the wider context for the study. Chapter two presents a review of the literature. The literature review begins by addressing the notion of body image in adolescence. The conceptualisation, construction, prevalence and consequences of body image are discussed, thus, providing a rationale for the importance of study in this area. Following this the literature review then presents research on the specific contextual nature of the construct and its applicability to study it within physical education. The literature review then progresses on to explore both of the constructs of competence and motivation within physical education from a Self Determination Theory perspective. I explore research that addresses the potential importance of these variables for encouraging an active life beyond the school day. Finally, the last section of this chapter considers the role that physical education may play in the adoption of a physically active lifestyle throughout the lifespan and introduces the concept of transfer of learning. This is addressed by providing a rationale for the importance of a physically active lifestyle in adolescence, the health benefits and current levels of activity in this population.

Chapter three puts forth the research questions to be explored throughout the thesis and explicitly addresses how these research questions are in place to fill gaps in the current literature. The overarching aim of addressing relationships between body image and motivation within year 9 physical education, will be explored through nine research questions.

Chapter four discusses the research methodology and research design used throughout the fieldwork process. This chapter firstly discusses the research context by providing information on the participating schools and the pupils that were involved in the study. Following this the research methods and procedures are considered. This is done by firstly providing the rationale for the selection of each method and then by providing information on the procedures utilised throughout the thesis. The limitations of the methodology will be presented at the

end of this chapter and will discuss factors that may limit the conclusion the study can draw but were not anticipated in the planning and design stages of the research.

Chapters five to nine present the data achieved through the fieldwork process. Chapter five provides a descriptive exploration of the nature of body image disturbance in the study population, by the correlation with a number of demographic variables. Chapter six then begins to explore the body within the context of physical education, by addressing situational variations in the construct and relationships with physical education lesson content. This chapter is a mixed method investigation incorporating both quantitative and qualitative data techniques. Chapter seven of the thesis then explores how measures of situational body satisfaction within physical education relate to a number of anthropometric and demographic variables. Chapter eight introduces the concept of motivation, using a self determination theory framework by firstly exploring the proposition that perceptions of competence is an antecedent of motivation and then by investigating how these variables relate to situational body satisfaction within physical education. The final data chapter, data chapter nine explores how situational body satisfaction, motivation for physical education and perceptions of competence relate to pupils perceptions that physical education stimulates them to engage in sports activities outside of school.

In chapter ten an overall discussion of the findings are presented, the practical application of the findings are discussed and the further limitations and delimitations are put forth. Chapter eleven is the conclusions section and once again reverts to the wider context of the findings and discusses future direction for research in this area.

Chapter 2: Literature Review

2.1 Introduction.

The purpose of this chapter is to review the literature concerning body image, perceptions of competence and motivation within physical education. The importance of these variables for behaviours within and beyond physical education will be discussed. Literature that highlights the role of physical education in encouraging an active lifestyle will be presented and the concept of transfer of learning introduced.

2.2 Defining the Population

This literature review will begin by addressing the population of interest for this study. Firstly, this will provide a rationale for the use of terminology throughout the thesis and secondly will begin to address the rationale for investigating this population.

Adolescence is the period of transition from childhood to adulthood and is associated with dramatic shifts in the physical, cognitive and emotional development, second only to those changes displayed during infancy (Williams *et al.*, 2002). The World Health Organisation (WHO) defines adolescence to be between the ages of 10-19 (Goodburn and Ross, 1995). The British Medical Association (BMA) reports similar definitions of adolescence to be between the ages of 11-19 (BMA, 2003). As a result of these established age ranges, participants in this research will be referred to as adolescents.

2.3 Body Image

This section of this chapter will provide an overview of current research within the body image domain. Initially I will explore the conceptualisation of body image with an emphasis of the psychological approach. Finally this section provides a rationale for the importance of research in this area, by investigating the prevalence and consequences of body image disturbance in adolescents.

2.3.1 Conceptualising Body Image

Body image is a hypothetical construct which is applied to explain behaviour patterns and psychological incidences, that will be explored throughout the preceding literature review. Definitions of body image vary depending upon theoretical orientations within which the conceptualisation occurred e.g. psychology, feminist philosophy etc. However, the majority of body image research is firmly established within mainstream psychology. The term was originally defined in the 1920's by Paul Schilder as 'the picture of our own body which we form in our mind, that is to say, the way in which the body appears to ourselves' (1950, pg.11). From the psychological orientation it has recently been argued that body image is a multidimensional construct, consisting of varying and diverse components (Smolak, 2004). Current definitions of the body image construct tend to encompass an individual's thoughts, feelings and perceptions of their body and have been described as the way in which an individual views their body and the subsequent mental representation they have of it (Davies, 1997).

The general consensus is that body image can be divided into two components; a perceptual and an attitudinal component, as seen in figure 1 (Cash, 2002a). The perceptual component of body image relates to the judgment of body size in relation to actual body size (Gardner, 2002). The attitudinal component refers to satisfaction or dissatisfaction with the body (Thompson, 2004). Body dissatisfaction can be concerned with weight or size and can either be global or site specific. This means that dissatisfaction can either be in relation to the entire body or specific body parts, for example arms, legs etc. The assessment of attitudinal aspects of body image is done with relative ease in comparison to perceptual distortion and thus may explain why the majority of research focuses on the narrow construct of body satisfaction and fails to take into consideration the perceptual component, otherwise known as body distortion (Grogan, 1999). In order to understand the multidimensional nature of the construct it is argued that both components require measurement (Gardner, 2002).

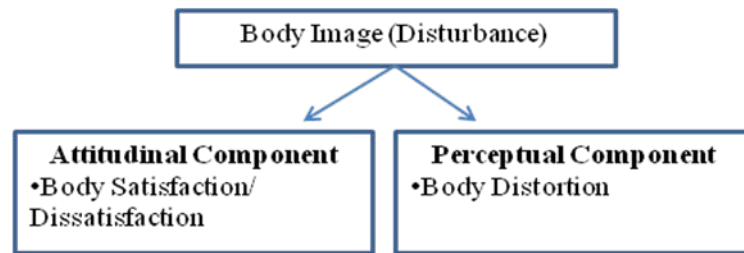


Figure 1: A Figure to highlight the conceptualisation of body image (disturbance) and its associated components.

Prolific body image authors such as Thompson and Cash have applied the terminology of body image disturbance(s), as an umbrella term to include all subcomponents of body image (Thompson *et al.*, 1999). In accordance with these authors, reference to the term body image disturbance throughout this thesis is a reference to the complex construct in its entirety. Thompson *et al.*, (1999, pg 7) argues that ‘body image has gradually developed over time into a *sponge phrase*, absorbing many different connotations and meanings’. The authors argue that applying a continuum model as a method of conceptualising the construct is appropriate. In the continuum model it is proposed that values of body image disturbance range from no disturbance to extreme disturbance, with the majority of individuals being situating in the middle of the continuum experiencing moderate body image disturbance. Individuals whom experience a lack of body image disturbance and thus fall towards the extreme left of the continuum will hereafter be referred to those with a positive body image.

This section has identified that the conceptualisation of the construct of body image varies depending upon theoretical orientation and the subsequent use of the terminology in research is diverse. This section sought to present a justification for the adoption of body image terminology set to follow in this thesis. The next section will begin to explore some of the conceptual perspectives associated with body image and the two sub components.

2.3.2 Conceptual Perspectives on Body Image Construction

The body image literature provides a broad array of conceptual and theoretical perspectives for understanding variations in body image and subsequent behavioural outcomes. The socio-cultural standpoint encompasses a variety of theoretical approaches which are all underpinned by a common theme; the understanding that culture influences the individual which subsequently influences behaviour. One of the most widely applied approaches to understanding how body image is constructed is the socio-cultural theoretical model or the dual pathway model (Stice and Agras, 1998). This approach predominately has application to female populations and/or for understanding the processes involved in the development of eating pathology (Stice, 2001). The socio-cultural model highlights the role of the mass media and peers in the process of developing a dysfunctional body image. It is proposed that the internalisation of unrealistically obtainable images and the subsequent pressures to conform to such standards contributes to the development of body dissatisfaction. This approach to understanding the construction of body image is based upon the assumption that the social contexts impacts internal representations of the body.

Although, socio-cultural approaches have helped to understand how individuals construct a disturbed body image, a cognitive behavioural perspective will be used as the underpinning approach for this research (see figure 2). This is because behavioural perspectives offer a focus upon situational factors in the process of understanding body image disturbance, whilst at the same time incorporating aspects of cultural socialisation. This perspective argues that an individual's disturbance at one moment in time is a result of dispositional, trait like characteristics combined with the context upon which they are situated in, as can be demonstrated in figure 2.

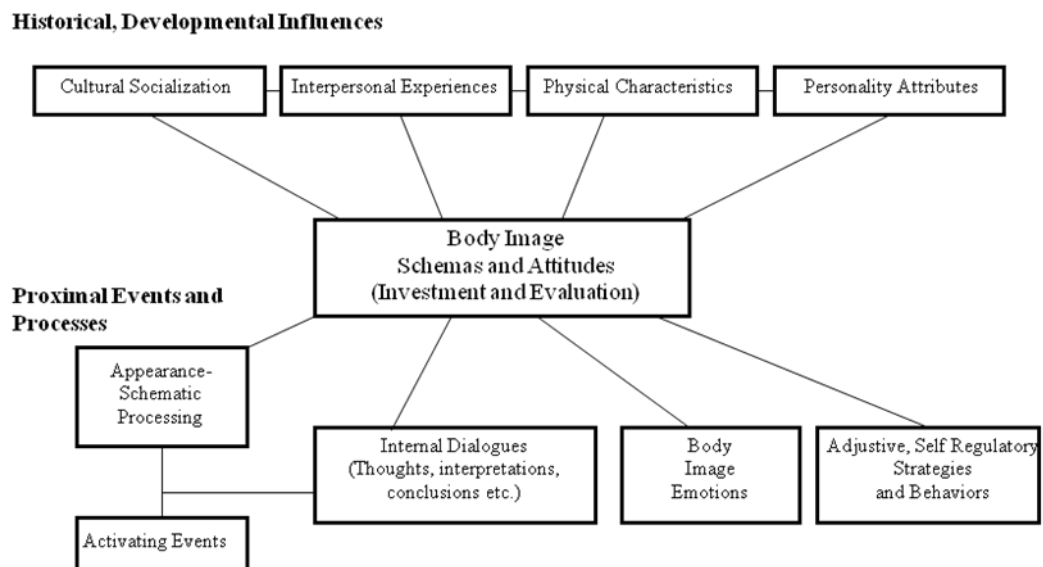


Figure 2 A cognitive-behavioral model of body image development and experiences (Cash, 2002a)

Figure 2 A cognitive-behavioural model of body image development and experiences (Cash, 2002a)

From a cognitive-behavioural perspective an individual's body image is constructed from a combination of proximal and historical events (Cash, 2002a). Proximal and historical events provide a distinction between previous social learning and current situational factors and experiences. Historical factors can be predispositions or past experiences which have impact upon an individual's cognitions and affective responses towards their bodies. Historical factors are mainly derived from an individual's socialisation regarding physical appearance, experiences during childhood and also more stable enduring traits such as personality attributes and physical appearance. Proximal events include activating events that fuel information processing relating to self evaluation of appearance, such as body exposure and the threat of social comparisons (Cash, 2002a). With reference to proximal events, adjustive and regulative strategies refer to an individual's regulatory behaviours which seek to reduce or normalise body image distress, at one particular moment in time.

In accordance with traditional psychological approaches body image disturbance is thought to be partly attributable to cognitive structures known as schemas (Cash, 2002a). These cognitive structures are responsible for processing

experiences and guiding future behaviours (Markus, 1977). It is thought that an individual who is schematic in terms of physical appearance, processes information in a different way to an individual who is not schematic (Markus, 1977). Thus, the schematic approach has utility for understanding variations in body image disturbance within populations. Critiques of the psychological approach to conceptualising body image suggest that as body image is a hypothetical construct, it is only one possible explanation for the phenomena being observed (Gleeson and Frith, 2006).

This section has addressed the conceptual approach that will be utilised throughout this thesis, by presenting the cognitive behavioural model of body image development and experiences. This section highlights how the construction of an individual's body image is understood from this perspective, by drawing upon a number of factors relating to proximal and historical events to understand how the construct may be susceptible to variations within different contexts. The section that follows will explore the prevalence of body image disturbance in order to explore the extent of this issue.

2.3.3 Prevalence of Body Image Disturbance

This section will explore the prevalence of body image disturbance in order to provide a rationale for the importance of this research topic. Empirical research within the body image domain has tended to focus on the prevalence and consequence of the psychological disturbance within females. Heightened socio-cultural emphasis placed upon female's physical attractiveness and attainment of a slender physique may lend researchers to focus their attentions towards this population. It has been argued that Western societal standards of physical attractiveness impose unrealistic and for the most part unobtainable standards of beauty upon women (Howson, 2004). Images of the female body presented by the media have significantly decreased in weight size over the past century (Katzamarzyk and Davis, 2001). As a consequence current societal standards of attractiveness emphasise thinness for females (Katzamarzyk and Davis, 2001). Thus, women feel increased pressure to conform to such idealised standards of physical attractiveness and experience discontent with their own bodies when they

are unable to achieve the portrayed ideal. From a self objectification theory perspective females have a greater tendency to internalise an observer's perspective of their own body (Holsen *et al.*, 2001). Therefore, females self worth is determined by comparing their own physical appearance to the unrealistic standards portrayed by western culture (Holsen *et al.*, 2001). Within the adult population rising body dissatisfaction is apparent for both males and females over the past 30 years (Cash, 2002b). Dissatisfaction with overall appearance increased by 28% and 33% between the years of 1972 and 1996 for males and females, respectively (Cash, 2002b).

When investigating issues surrounding female body image disturbance there appears a particular interest in the sub group of adolescent girls. In terms of youth populations it has been well documented that children and adolescents have concerns about body weight and shape (Smolak, 2004). Adolescence is a time of physical change, which brings with it an increased focus and evaluation of the body (Abbott and Barber, 2010). During puberty girls tend to experience an increase in body fat that leads to a shift away from the slim ideal female body (McCabe *et al.*, 2003a). The discrepancy between the ideal self and the current self tends to be heightened by the body fat increases at puberty. Therefore, as youth's pass through adolescence body satisfaction noticeably declines for females (Rosenblum and Lewis, 1999). Associations have been noted between the timing of puberty and heightened body image concerns. In girls increases in body image disturbance occurs around the ages of 13-15 years and 15 to 18 years in boys (Holsen *et al.*, 2001). Adolescent girl's body image disturbance is generally associated with a desire to be thinner (Tiggemann, 2004). Estimates of the prevalence of body image disturbance and related phenomena vary depending upon the method of assessment. In a sample of adolescent girls, aged between 11 and 15 body dissatisfaction was reported at 24%, when body dissatisfaction was assessed by assessment of dissatisfaction with nine body parts (Stice and Whitenton, 2002), however, a review paper reported an 80% prevalence of dissatisfaction in similar populations (Cohane and Pope, 2001). With this variation in mind, Levine and Smolak (2002) estimate that between 50% and 80% of adolescent girls have a desire to be thinner.

Although there is this dense body of research which investigates body image disturbance within adolescent girls, there is recent empirical support for the notion of body image dissatisfaction to be problematic within adolescent males (McCabe and Ricciardelli, 2004a). Body image concerns appear to be an issue relevant to both boys and girls; however, the resultant body dissatisfaction appears to be derived from different processes. Ricciardelli, McCabe and Ridge (2006) suggest that males have concerns over aspects of the body which emphasis masculinity, such as the shoulders, chest and abdomen. Approximately a third of adolescent boys have a desire to be more muscular, while another third of boys have a desire to be thinner (Furnham and Calman, 1998; Ricciardelli and McCabe, 2003). McCabe and Ricciardelli, (2004b) argue that if these two processes of body dissatisfaction are combined then the amount of body dissatisfaction in adolescent boys and girls is of a similar amount. Other evidence suggests that body dissatisfaction is slightly lower in boys but still has problematic implications for physical and psychological well being (Cohane and Pope, 2001). Although there appears to be a recent research interest investigating issues concerning boy's body image (Cohane and Pope, 2001; Ricciardelli and McCabe, 2003; McCabe and Ricciardelli, 2004a) there is no epidemiological data available for this population (Smolak, 2004).

These worrying levels of body image disturbance signify the scale of the body image 'epidemic' particularly within western societies and the need to adopt strategies to alleviate concerns surrounding physical appearance. It is apparent that dissatisfaction with aspects of body size and weight is commonplace in both adolescent boys and girls. The next section will explore how a high level of body image disturbance and/or high levels of body dissatisfaction relate to a number of physical and psychological health related outcomes.

2.3.4 Consequences of Body Image Disturbance: Health Behaviours and Psychological distress

Body image disturbance is of particular interest to health psychologists due to the implications that such disturbances have for psychological well being and health related behaviours (Grogan, 2006). Body image disturbance is consistently associated with a range of negative eating behaviours (Levine and Piran, 2004). Emotional aspects of body image disturbance, such as body dissatisfaction have been associated with both the maintenance and development of eating pathology, such as anorexia and bulimia (Stice and Shaw, 2002; Fenandez-Aranda, Dahme and Meerman, 1999).

Moreover, body satisfaction has been associated with aspects as psychological well being, such as self esteem in boys and girls (McCabe and Ricciardelli, 2003b; Kostanski and Gullone, 1998). Van Den Berg *et al.*, (2010) found associations between low self esteem and poor body dissatisfaction in adolescents from a range of demographic backgrounds. Body dissatisfaction also has implications for elevated depressive mood in adolescent boys and girls (Paxton *et al.*, 2006; Kostanski and Gullone, 1998). In addition, lower body satisfaction is associated with more anxiety (Kostanski and Gullone, 1998) and increased negative self perceptions (Makri-Botsari, 2009). A review of male body dissatisfaction also noted steroid use and exercise dependence as correlates of body image dissatisfaction (McCabe and Ricciardelli, 2004).

Body image does not just relate to current psychological well being but also has implication for future mental distress (Stice and Bearman, 2001). Poor body satisfaction during adolescence predicts future health behaviours in adolescent boys and girls (Neumark-Sztainer *et al.*, 2006). In their longitudinal study Neumark-Sztainer and colleagues (2006) revealed that low body satisfaction during adolescence predicted future unhealthy dieting, unhealthy weight control behaviours, binge eating, lower physical activity engagement and lower fruit and vegetable intake in females. For males, relationships were similar with the addition of low body image satisfaction predicting future smoking behaviours but not fruit and vegetable intake.

Body Image disturbance also has connotations for physical activity participation in youth. An individual suffering with a poor body image is likely to adopt certain behavioural strategies as a means of controlling the associated anxiety (Leon *et al.*, 1993). Physical activity is one such behavioural practice which may be of particular importance to those suffering from a poor body image. The important link between the two variables can firstly be attributed to the potential of physical activity to change the body e.g. increased fat loss. In opposition, this outcome may be linked with increased resistance to physical activity; an issue that will be explored further throughout this section. Research concerning adult populations has noted significant positive associations between body image and physical activity participation in a group of amputees (Wetterhahn *et al.*, 2002). Physical activity has also been reported to have a protective function against the development of body image concerns in adults (Furnham *et al.*, 1994; Krane *et al.*, 2001). However, measures of physical appearance or body satisfaction appear a relatively understudied correlate of physical activity behaviour in youth (Sallis *et al.*, 1999). A claim that can be upheld by the limited research presented below that has explored this issue.

In youth it is uncertain whether low body satisfaction impedes involvement in physical activity as a result of body anxiety or acts as a motivating tool for engagement with the aim of enhancing physical appearance (Neumark-Sztainer *et al.*, 2004). In this case participation in physical activity would be for extrinsic reasons and thus according to Self Determination Theory would be associated with controlled motivation. In this respect the changes of long term engagement in the activities would be lower, (This issue will be further explored in the motivation section of this literature review). Burgess, Grogan and Burwitz (2006) have suggested that body image concerns are likely to be a dominant predictor of physical activity behaviours, especially in adolescent girls. However, the potential impact of regular physical activity upon affective, cognitive and perceptual outcomes relating to physical appearance must also be acknowledged.

Previous research examining the relationship between body image and physical activity within this population is limited (Duncan *et al.*, 2004). Although it has

been suggested that the noticeable difference in physical activity levels between boys and girls at adolescence may partly be attributable to gender differences in body satisfaction (Neumark-Sztainer *et al.*, 2004), there is limited evidence yet to support this claim. In addition, few studies linked into the context of physical education. Heinberg and colleagues (2001) argue that the relationship between body image and health related behaviour can be demonstrated by an inverted U-shape curve. They postulate that when body image is not problematic individuals may not engage in health behaviours, even when the perceived health benefits are acknowledged. On the other hand, those individuals whom experience considerable body image distress may avoid engagement in health related behaviours as they perceive an inability to make changes to their body. However, research concerning the proposed relationship is inconclusive and inconsistent.

In 1994 Douthitt investigated determinants of exercise adherence in a sample of 15-17 year old male and female physical education students in Colorado. The author discovered a positive correlation between perceived physical appearance and exercise adherence in female youth but not male. The study discovered that global self worth and perceived physical appearance predicted 32% of the variance in physical activity adherence (Douthitt, 1994). Although this study does not directly measure the psychological construct of body image, it is clear to see how perceptions of physical appearance can be paralleled with the measure of body satisfaction. This early study provides an indication of the influences that perceptions of physical appearance can have on physical activity behaviours, in this case exercise. The correlational nature of the analysis provides no information on causation and it cannot be determined if an individual with a higher positive perception of their physical appearance engages in physical activity as a means of maintaining these perceptions or whether higher physical activity levels promote increases in perceptions of physical appearance.

In 2003 Neumark-Sztainer *et al.*, investigated factors associated with changes in physical activity levels in a group of inactive adolescent girls in America. Like the previous study measures of physical appearance were assessed. However, the study also incorporated a measure of body satisfaction. Neither of the variables

significantly correlated with changes in leisure time physical activity over the 8 month measurement period. Physical activity was measured subjectively by a recall questionnaire. Following this Neumark-Sztainer *et al.*, (2004) investigated direct relationships between body satisfaction and physical activity in adolescent boys and girls. Boys that were categorised as having low body satisfaction engaged in almost 3 hours less activity per week than those with high body satisfaction. In addition, boys with a high body satisfaction had higher sports participation (72.1%) than those with moderate body satisfaction (68%) and low body satisfaction (59.7%). The amount of hours per week that boys with high body satisfaction engaged in television viewing was lower than those with low body satisfaction, suggesting that sedentary pursuits replace physical activity and sports participation within this group. For the adolescent girls, the results were of a similar direction but not statistically significant. This may partly be attributable to the subjective measure of physical activity and the possibility of producing socially desirable responses (Sirard and Pate, 2001).

Two years later the same research group examined longitudinal associations between body satisfaction and health behaviours in adolescent boys and girls (Neumark-Sztainer *et al.*, 2006). The results indicated that time 1 body satisfaction significantly predicted moderate to vigorous physical activity (MVPA) engagement 5 years later. Boys and girls with high body satisfaction at time 1 engaged in over 30mins more MVPA across the week at time 2 compared to their low body image counterparts. This relationship still held significance after adjusting for BMI. As with the previous study measures of MVPA were determined by questionnaire and thus will be subject to the same bias.

In a 2004 study of British school children relationships were examined between body esteem and physical activity in 11-14 year old boys and girls (Duncan *et al.*, 2004). The study utilised The Body Esteem Scale for children as a measure of attitudinal body image (Mendelson and White, 1982) and physical activity was assessed by means of a four day recall questionnaire (Cale, 1993). The research identified no significant relationships between body esteem and physical activity and also body esteem and energy expenditure. However, the authors noted a need

for further research to examine the relationship in children and adolescents and stated a particular need for explorations utilising measures of different physical activity thresholds. This study provides an initial insight into how these variables relate within British populations.

From a review of the few studies which examine the association between physical activity engagement and body image within youth methodological inconsistencies and flaws are apparent. Firstly, the study by Douhitt (1994) utilises a measure of physical appearance and not body image. Secondly, the study does not directly assess measures of physical activity but more so adherence. However, this early study is useful as it presents potential associations that require further exploration. The three studies presented by Neumark-Sztainer and colleagues (2003; 2004; 2006) further the work of Douhitt (1994) by incorporating measures of physical activity. However, these measures are subjective recall questionnaires and thus limited due to recall errors, social desirability and deliberate misrepresentations (Sirard and Pate, 2001). The study of British school children also utilises indirect measures of physical activity and is thus subject to the similar bias (Duncan *et al.*, 2004).

All of the studies presented provide an assessment of only the attitudinal component of body image in the form of body satisfaction (Neumark-Sztainer *et al.*, 2003; 2004; 2006) and body esteem (Duncan *et al.*, 2004). However, it is widely accepted that body image is a multidimensional construct (Cash and Pruzinsky, 2002; Smolak, 2004). Alongside the attitudinal aspect of body image is a perceptual component (Cash, 2002). The perceptual component of body image relates to the judgement of body size in relation to actual body size (Gardner, 2002). The perceptual and attitudinal components of body image are thought to function independently of one another and both require measurement in order to capture the multidimensional nature of the construct (Gardner, 2002). Therefore, the studies presented could be deemed not to be measuring body image at all but merely a facet of the construct. Future research should focus upon investigating the relationship in terms of both attitudinal a perceptual body image

disturbance and specifically within the physical education setting. This can be identified as an established gap within the literature.

A lack of research specifically within the physical education context suggests a need for further exploration. Ryan and colleagues (2009) investigated relationships between body shape satisfaction and attitudes towards physical education of middle school students in Florida. The study found statistically insignificant relationships between the two variables but confirmed the need for further examination. More recently, Bevans *et al.*, (2010) investigated the construct of body image within the physical education context and concluded that physical activity engagement was indirectly affected by pupils' body image via the association with physical education engagement. These promising initial results warrant further investigation of the complex interplay between, body image, physical activity and physical education. The next section will address in more detail literature that has explored body image and associated factors specifically within physical education.

2.4 Body Image in Physical Education

Schools appear to play a key role in regulating and shaping the bodies of young people. Schemes which are aimed at tackling obesity in children and adolescents have been implemented in schools through initiatives such as the 'Healthy Schools Programme'⁷ (Stears, 2000). Moreover, the regulation of the nutritional standards of school meals in 2001 and more recently the injection of 280Million into school kitchens after the 'Feed me Better'⁸ campaign promoted by Jamie Oliver makes it apparent the role that schools play in shaping young people's bodies and perceptions of health.

This section will put the body into context by the examination of the role that the school environment plays upon the construction of body image in young people. This section will focus specifically upon the role of physical education in the

⁷ Healthy schools programme is a long term national initiative aimed at helping young people to develop healthy behaviours and to reduce health inequalities. It also aims to help promote social inclusion and raise the achievement of children.

⁸ The Feed me Better Campaign was a campaign started in 2005 by television chef Jamie Oliver. The aim of the campaign was to transform school meals delivered to children to healthier alternatives.

experience of an individual's body. This is done so with an emphasis upon specific contextual and personal factors and the influence upon the distribution of body image within and between physical education classes.

2.4.1 Pupil Level Predictors of Body Image Disturbance within Physical Education

This section will explore potential pupil level predictors of body image disturbance within physical education; these factors will also be referred to as between-pupil factors throughout the course of this thesis. These are personal factors that interact at the pupil level to potentially influence levels of body image and/or body satisfaction. For example pupil level predictors of between-pupil factors can be variables such as socioeconomic status, sex and ethnicity and will be explored hereafter.

The significant role that body image plays in an adolescent's well being and adoption of avoidance of a number of health related behaviours has been established. However, although all children experience physical education at school, there is little or no available research which provides an account of the distribution of body image within the physical education context and the subsequent predictors of body image within this setting. For example, to the author's knowledge there is no existing research that indicates how body image scores are distributed within physical education. This is surprising given the overtly physical and evaluative nature of the context. Examining body image within this specific setting may lead to the development of context specific strategies to reduce concerns within this environment. With this in mind, this section will address potential pupil level predictors of body image disturbance in physical education. Between-pupil factors or pupil level predictors are variables that interact to produce differences between pupils, across all classes. Pupil level factors can also be those factors that produce differences within classes, such as pupils' personal motivation.

At the pupil level it is likely that variations in body image disturbance could be attributed to differences in demographic variables such as ethnicity, sex and socioeconomic status (Duncan *et al.*, 2004). As previously suggested, research

proposes that body image disturbance is of slightly higher prevalence in female populations (Cohane and Pope, 2001) due to differences in the socio-cultural pressures associated with physical attractiveness between boys and girls (McCabe, Ricciardelli and Finemore, 2002; Smolak and Levine, 2001). Individual socioeconomic status may also be a factor which contributes to levels of body image disturbance between pupils. However, it is an understudied relationship (Grogan, 1999). Some studies have identified no associations between high and low socioeconomic groups and body image disturbance in females (O'Dea, 1994). Others have noted associations but at a non significant level, for example Wang *et al.*, (2006) identified that boys and girls of higher socioeconomic status were more likely to desire a thinner physique; however, the relationships were not significant. However, significant associations have been identified in a number of studies, whereby, females of higher socioeconomic status have a higher prevalence of weight loss attempts and dietary restraint (Wardle and Marshland, 1990; Paxton *et al.*, 1994; Walters and Kendler, 1995). The relationship in adolescent boys is not as widely addressed. However, O'Dea and Caputi (2001) concluded that boys of a lower socioeconomic status were likely to resist dominant socio-cultural messages regarding body image and have higher physical self esteem.

Moreover, variations in body image at the pupil level may be due to differences in ethnicity. It is suggested that different ethnic groups may have different norms in relation to body shape and size (Neumark-Sztainer *et al.*, 2002). Empirical research proposes that black individuals have higher body image, body satisfaction levels and body esteem levels than other ethnic groups (Franko and Streigel, 2002; Neumark-Sztainer *et al.*, 2002; Jones, Fries and Danish, 2007). However, it has recently been acknowledged that relatively little research has addressed relationships between ethnicity and aspects of body image disturbance in British populations (Duncan *et al.*, 2009). With the exception of one exploratory study of UK children that revealed similar findings (Duncan *et al.*, 2009). Franko and Steigel (2002) propose that differences between ethnic groups are based upon the cultural qualities associated with physical attractiveness. For

example, their research identified that the association between physical attraction and leanness is not as prominent in black individuals.

Body fat and Body Mass Index (BMI) has also established negative relationships with body image within youth populations and is likely to contribute to variations in body image within a population (Rosenblum and Lewis, 1999; Duncan *et al.*, 2004). It is proposed that research tends to utilise BMI as a proxy measure of body fat and little research has explored associations between body image and body fat (Dunacn *et al.*, 2004). When relationships between the two variables have been explored it has been concluded that higher levels of body fat are associated with lower levels of body image and thus lower levels of body satisfaction (Duncan *et al.*, 2002; Duncan *et al.*, 2004).

The literature presented in this section suggests that interpersonal factors may play a significant role in determining between-pupil variations in body image disturbance. This section highlights the importance of understanding these variables when addressing the distribution of body image concerns or body satisfaction levels. The section following this will explore between-class factors that have the potential to contribute to differences between physical education classes.

2.4.3 Class level predictors of body image disturbance within Physical Education

In addition to factors that potentially contribute to variations between-pupils within physical education classes, the literature presents a rationale for potential between-class differences in physical education. Class level factors or between class variables are potential contextual variables that are characterising a particular class (e.g. the gender of the teacher, the number of pupils in the classroom, the gender distribution in the class, the topic of a lesson) that may be interacting to influence differences in body image scores between physical education classes. Although body image is thought to be a construct which holds relative stability over time (Tiggemann and Lynch, 2002) it is also thought to have state like characteristics, as situational variability has been observed (Brinded *et al.*, 1990). Based upon a cognitive-behavioural paradigm, proximal events and

processes become significant for the construction of contextual bodily attitudes and perceptions. The physical education environment has the potential to activate schema driven processing relating to physical appearance by situational specific cues. There appears to be a lack of research which explicitly examines the psychological construct of body image within the physical education setting. However, there is a broad array of research which examines factors relating to physical education engagement that based upon proximal events outlined by Cash (2002a) have the potential to impact body image.

One such factor which has been shown to influence attitudes towards physical education and may have implications for body image is clothing and kit (Luke and Sinclair, 1991). In their 1991 mixed method study Luke and Sinclair identified that clothing was a determinant of negative attitudes towards physical education for both male and female secondary school students. Students reported discontent with the clothing on the basis of conformity to dress code and noted that clothes were insufficient for warmth and comfort purposes. In a similar nature, Flintoff and Scratton (2001) explored 15 year old girl's perceptions and attitudes towards physical education. During interviews physical education kit was identified as a key determinant of attitudes and perceptions of physical education. As with the aforementioned study girls expressed dissatisfaction with compulsory kit and felt uncomfortable when clothing revealed their bodies. Ntoumanis *et al.*, (2004) reported similar findings; noting that feeling uncomfortable in kit was a perceived cause of amotivation in physical education for 14-15 year old girls. The students suggested that providing a choice of clothing would reduce body image concerns. The theme of kit choice has also transpired in a qualitative review by Allender *et al.*, (2006). It emerged that ill-fitting uniforms were a barrier for physical education participation in young women. More recent research has also suggested that kit choice would make girls feel more comfortable during physical education lessons (Velija and Kumar, 2009). Thus, physical education kit choice appears to be a major contributor to engagement and attitudes towards physical education. Based upon the cognitive behavioural paradigm proposed by Cash (2002) it can be suggested that clothing within this context may activate schema driven processing relating to physical appearance and therefore influence body image.

As previously noted the prospect of social scrutiny has been suggested by Cash (2002) to be a factor which has the potential to heighten body image disturbance. In terms of application within physical education, issues relating to body surveillance has been addressed in a number of studies (Fintoff and Scratton, 2001; Ntoumanis *et al.*, 2004; Velija and Kumar, 2009). With this in mind application of the notion of Foucault's concept of docile bodies appears relevant. Originally presented in 'Discipline and Punishment, the birth of the prison' (1975) Foucault introduces the idea that bodies can be disciplined. Foucault suggests that when direct physical punishment of the body is removed, the body must be disciplined by other means. Thus, punishment is delivered through controlling the mind which subsequently controls the body. In this respect Foucault discusses Bentham's notion on the Panopticon. The Panopticon is a circular prison with a surveillance tower situated in the middle. The outer building is split into cells, making every occupant within the prison visible from the surveillance tower. The prisoner is constantly visible but the guard is not. The prisoner always has the potential to be watched but is not aware when this is happening. Thus, the knowledge of the surveillance of the guards is sufficient to discipline the body, unlike earlier forms of punishment whereby the body was physically restricted. As a consequence bodies become docile. With this in mind, it is proposed that no physical contact is required to influence the ways in which children and adolescents present themselves, it is through the mere prospect of the surveillance of others or the panopticon gaze that contribute to the act of disciplining and shaping bodies within physical education. In the context of Self Determination Theory that will be discussed later in this literature review, this behaviour change will only remain when the external factor, in this case surveillance is present, subsequently no internalised changes will occur.

Firstly the coeducational setting appears to be a sight of social scrutiny, particularly for females (Ntoumanis *et al.*, 2004). In this respect gender is both a pupil and a class level variable, as discussed above. In the coeducational setting girls feel that their bodies are under examination from boys, which leads to increases in body anxiety (Fintoff and Scratton, 2001). Research suggests that when women anticipate a male gaze, resultant increases in body shame and social

physique anxiety are apparent (Calogero, 2004). Moreover, girls place increased value on their physical appearance in the coeducational context (O'Donovan and Kirk, 2008). Girls report increased self consciousness about their bodies whilst engaging in physical activities in the presence of boys (Dwyer *et al.*, 2006). This leads to girls avoiding engagement in certain activities such as swimming within the co-educational context (Flintoff and Scratton, 2001). Moreover, girls who opted not to undertake GCSE physical education expressed concerns regarding co-educational lessons, suggesting this could have been a potential factor in their decision making process. In a similar vein, Allender *et al.*, (2006) suggests that offering single sex classes is likely to promote girls engagement. In relation to the learning goals for physical education, dealing with this issue in terms of lifelong engagement in physical activity, rather than avoiding co-educational classes maybe appropriate.

Another site of social scrutiny which has the possibility of amplifying body image distress is the changing room environment. Cash (2002a) proposes that when the body is exposed heightened self-evaluation of one's physical appearance is likely. Girls experience discontent about their bodies being on display (Ntoumanis *et al.*, 2004; Vleijja and Kumar, 2009). Dissatisfaction with changing room facilities influences motivation (Ntoumanis *et al.*, 2004) and attitudes towards physical education (Luke and Sinclair, 1991). This is another factor which has potential associations with body image thus having implications for engagement.

From reviewing the literature it can be inferred that co-educational classes, kit choice and changing rooms are three of the main reoccurring themes that act as an antecedent of physical education engagement, particularly for girls. Based upon the cognitive behavioural model of body image construction proposed by Cash (2002a) these activating events are likely to incite thoughts relating to physical appearance, thus impacting body image levels. Increasing feelings of body satisfaction is likely to increase participation within physical education and create positive experiences in physical education which will hopefully track into leisure time and adult life.

Another potential contextual cue to stimulate increased cognitive and affective responses towards physique is the activity type. This may be the result of the associated body type with that sport or the surveillance that the participant feels their body is under. In accordance with Cash (2002a) different contexts may present varying degrees of stimulus which activate thoughts and self-evaluations of physical appearance.

Numerous studies have investigated how engagement in different types of sporting activities can elevate levels of body dissatisfaction (Swami, Steadman and Tovee, 2009; De bruin, Oudejan and Baker. 2007; Davidson, Earnest and Birch 2002). However, the majority of research has investigated the impact that prolonged engagement has upon feelings of body satisfaction in athletes (Swami *et al.*, 2009). It has been suggested that those whom compete in competitive sports present higher levels of body dissatisfaction than recreational athletes (Smolak *et al.*, 2000). Moreover, body image dissatisfaction is also thought to have greater prevalence amongst female athletes that compete in sports that promote leanness; e.g. swimming, gymnastic and dance due to the links established between performance and certain body types and qualities in these activities (de Bruin *et al.*, 2007; Davidson *et al.*, 2007). This body dissatisfaction is suggested to be the result of socio-cultural pressures which associate leanness with enhanced performance (Brownell, Rodin and Wilmore, 1992). There appears to be a lack of research which has investigated the acute exposure to activities which emphasis leanness. It may be that individuals internalise the socio-cultural ideals relating to the type of body associated with the sport and thus experience body dissatisfaction when they deem that their body does not have the sufficient physical qualities for engagement.

Research supports the notion that different types of exercises impact body satisfaction differently (Henry, Anshel and Michael, 2006). A 12 week intervention study of college age females revealed that circuit training leads to the greatest improvements in body satisfaction compared to the aerobic exercise group (Henry *et al.*, 2006). It could be suggested that that this maybe the result of the exercise mode (i.e. aerobic vs resistance). However, in a 2009 review of the

impact of exercise interventions on body image it was found that exercise mode does not impact the effect size of the relationship (Campbell and Hausenblas, 2009). This study provides preliminary evidence that different types of exercises have varying implications for how individuals feel about their bodies. However, it must be considered that results have the potential to be mediated by changes in body composition which were not measured in the study.

Research concerning female populations has also addressed differences in affective body image outcomes as a result of engagement in traditionally feminine and masculine sports. The general consensus is that female body dissatisfaction is the direct result of the dominant cultural norms regarding feminine beauty and physical attractiveness (Crissey and Crissey Honea, 2006). Engagement in sport may act to reinforce the dominant cultural norms of femininity through practices such as weight loss (Malcom, 2003). However, sport may also act as a site to resist gender discourses regarding the body by practices of physical competence (Smolak, Murnen and Ruble, 2000).

Sports are stereotypically divided into those which are masculine and feminine. In sports that are considered feminine the media have a tendency to emphasise femininity and physical attractiveness, by highlighting elegance, thinness and body shape (Crissey and Crissey Honea, 2006). Thus, sports that are stereotypically feminine are likely to encourage practices that reinforce dominant cultural standards of physical attractiveness (Crissey and Crissey Honea, 2006). Girls who participate in feminine sports over a sustained period of time are more likely to perceive themselves as overweight and engage in weight loss strategies (Crissey and Crissey Honea, 2006). Girls engaged in feminine sports may have a greater desire to emphasise their femininity and reinforce the dominant discourse of physical attractiveness (Crissey and Crissey Honea, 2006).

There appears to be a lack of research which investigates the acute impact of short term participation in stereotypically masculine and feminine sports within a non elite population. Further research could contribute and expand upon existing knowledge by investigating the effect short term engagement has upon perceptual and affective outcomes relating to the body. Particularly within physical

education there appears to be a gap in the extant literature which explicitly examines how a block of lessons of stereotypically masculine and feminine activities influences these outcomes.

Traditional feminine sports appear to be a potential site for increases in situational body image disturbances. Sports and activities whereby the body is placed on display are also sites that could possibly increase concerns surrounding the body, due to the prospect of social scrutiny and body exposure (Cash, 2002a).

Swimming is an activity whereby the body is exposed beyond that of other physical education activities. A 2000 study of experiences of adolescent girls at swimming pools reported girl's discontent with exposing their bodies (James, 2000). This was particularly relevant when in the presence of boys but girls also felt discomfort in the presence of other girls. The majority of girls developed coping strategies when negotiating the swimming environment. James (2000), also identified a group of 'avoiders'; those whom would rather face punishment by the teacher than exposing their bodies in front of other pupils. This study is significant as it highlights the potential impact that the swimming can have on situational body image and subsequent engagement. Similar outcomes were identified by Whitehead and Biddle (2008) in their investigation of adolescent girl's perceptions of physical activity. Swimming was identified as an area which provoked self presentational concerns. The swimming environment was deemed threatening and therefore was avoided by a large proportion of girls. Girls also mentioned a number of coping strategies, such as trying to cover their exposed bodies with towels and t-shirts.

Burgess, Grogan and Burwitz (2006) identified swimming as a problematic context of which can have negative connotations for body image in adolescent girls. In this intervention study aerobic dance was integrated into a six week physical education block and compared against normal physical education swimming lessons over the same period. Girls experienced significant decreases in feelings of physical attractiveness following the swimming block. Girls also experienced significant increases in 'feeling fat' following 6 weeks of swimming but significantly decreased following dance aerobics. Results of this study

suggest that physical education swimming lessons have negative impacts upon how adolescent girls feel about their bodies. The study also suggests the potential utility of aerobic dance to increase body satisfaction during physical education. The authors suggest that the increases in feelings of body satisfaction in the aerobics dance group were the result of the non-threatening and non competitive environment. However, this study lacks a measure of body size and body composition change. It could be that the different intervention activities resulted in different weight loss or variations in body composition which influenced how they felt about their bodies.

From a review of the literature it can be concluded that there is a distinct lack of research which examines the influence of activity type upon aspects of body image within the physical education setting. In the next section motivation will be introduced, using Self Determination Theory as a guiding framework. Links will be drawn between body image and motivation and also the application of Self Determination Theory in physical education.

2.5 Motivation

The section will introduce motivation from a Self Determination Theory perspective before investigating its application within physical education and physical activity based research. Finally, relationships between body image and motivation will be discussed in relation to research within the same domains.

Motivation is apparent in all aspects of human life, from compulsory behaviours to behaviours which are executed through free choice. An individual is said to be motivated when they are *moved* to execute a particular behaviour (Deci and Ryan, 2000). A lack of motivation is apparent when stimulation or momentum to execute a behaviour or action is nonexistent (Deci and Ryan, 2000). Theories and frameworks that have been constructed to assess the underpinnings of motivation tend to treat motivation from a unitary perspective. Thus, suggesting that motivation is situated along a continuum with people experiencing varying levels of motivation for different activities. Self Determination Theory provides a

framework which allows the understanding of motivation from a different perspective. The principles underlying Self Determination Theory suggest that it is not the degree of motivation that is important for affective, cognitive and behavioural outcomes but more so the type of motivation (Deci and Ryan, 2008). With this in mind Self Determination Theory will be the guiding framework for the current thesis.

2.5.1 Self Determination Theory

Self Determination Theory is a macro-theory of human motivation, which allows an understanding of the initiation and maintenance of behaviours. Self Determination Theory is the result of the empirical evolution of four mini theories; Cognitive Evaluation Theory (Deci, 1975; Deci and Ryan, 1985a), Organismic Intergration Theory (Deci and Ryan, 1985a), Causality Orientations Theory (Deci and Ryan, 1985b) and Basic Needs Theory (Deci and Ryan, 2000).

As previously noted, Self Determination Theory suggests that the type of motivation is of greater importance than the quantity of motivation for explaining human actions (Deci and Ryan, 2000). The theory proposes that behaviours can be classified as intrinsically motivated, extrinsically motivated and amotivated (Deci and Ryan, 1991). Intrinsically motivated behaviours occur without external rewards, thus an activity is undertaken for the inherent interest as opposed to the outcomes of the activity (Deci and Ryan, 1991). In comparison, extrinsic motivation is apparent when an activity is undertaken as a means to an end that lies outside participation in the activity itself. Extrinsic motivation is apparent when engagement is a result of reasons that emanate from outside the individual. Finally, amotivated behaviour is evident when an individual is neither intrinsically or extrinsically motivated, thus, lacks motivation and volition with respect to a particular behaviour.

Motivated behaviours are represented along a self determination continuum, ranging from lower to higher levels of self determination, as shown in figure 3. The continuum ranges from amotivation at the least self determined end to intrinsic motivation at the opposite end. Intrinsic motivation represents behaviours that are fully internalised and self determined. Individuals display

more self determined forms of motivation as they internalise to a greater degree, reasons for engaging in behaviour, thus, becoming significant for self representation. In other words, the social environment is integrated with the individual. In contrast, behaviours are less self determined, if the activity becomes a means to an end. It is suggested that more self determined forms of motivation lead to positive outcomes in respect to cognition, behaviour and affect (Prusak *et al.*, 2004). Empirical support for this notion is apparent in increases in effort and persistence (Gagne *et al.*, 2003), interest and enjoyment (Reis *et al.*, 2000) associated with self determination.

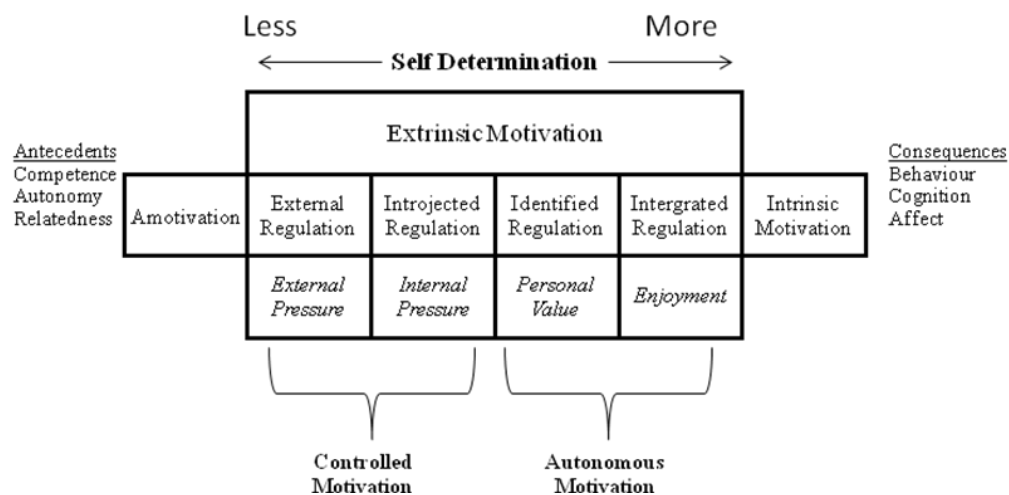


Figure 3: A continuum of self determination in relation to motivation

Extrinsic motivation is described with reference to four sub categories, which are characterised by varying levels of self determination (Deci and Ryan, 1985, 1991). External regulation corresponds to behaviours which are regulated by external sources, such as punishment or rewards and represents the least self determined form of extrinsic motivation. Moving along the continuum towards higher self determination, introjected regulation relates to behaviours that are starting to be internalised. Individuals may engage in certain behaviours to avoid feelings of guilt or to gain social approval. The next along the continuum is identified regulation which is apparent when behaviours become more self determined. Behaviours which are performed under identified regulation are

apparent when the outcome of the behaviour is valued. Finally, integrated regulation is the most self determined form of extrinsic motivation and is evident when behaviours are executed out of choice in order to obtain personal goals, this is apparent across domains, such as work home etc.

Deci and Ryan (1991) propose that behaviours along the continuum can more specifically be viewed as autonomous, controlled or amotivated. Intrinsic motivation is considered to be one of the forms of autonomous motivation. Forms of extrinsic motivation in which an individual acknowledges the value of the activity are also classified as autonomous forms of motivation. Thus, identified and integrated regulation are also considered within this category. Conversely, controlled forms of motivation are apparent when behaviour is regulated by external means or introjected regulation. Controlled forms of regulation are thus characterised by either internal or external sources of pressure (Deci and Ryan, 2001).

Vallerand (1997) argues that social factors influence self determined motivation through the satisfaction of three psychological needs. The three antecedents of competence, autonomy and relatedness are proposed to influence an individual's motivational state. It is proposed that in order for optimal motivational functioning to occur these three psychological needs should be satisfied, as identified in figure 3 (Vansteenkiste, Niemiec and Soenens, 2010). The psychological need for autonomy relates to an individual's perception of choice in their behaviour. This can be expressed as an individual's need to feel like the 'origin' and not the pawn' of their behaviours (deCharms, 1968). The need for competence relates to a desire to feel capable and confident when executing behaviours. Finally, a need for relatedness is associated with an experience of connectedness with others (Baumeister and Leary, 1995). Experience of autonomous or controlled forms of motivation within a particular context is dependent upon the extent to which these fundamental needs are satisfied (Ryan and Deci, 2000, 2007). Thus, basic psychological needs theory provides an approach for understanding how certain contextual and environmental factors influence outcomes in a variety of settings. Need supportive environments have

three main characteristics: autonomy supportive, competence facilitating (or well structured) and relatedness supportive (Skinner and Belmont, 1993). Within the context of physical education teachers can facilitate autonomy supportive environments by limiting controlling language, providing children with a choice of activities and also a rationale for participation (Reeve and Jang, 2006). For example, in the 2013 paper by Haerens *et al.*, (2013) an example of a behaviour that is autonomy supportive is when a teacher provides choice in the order of activities, choice of materials used, choice of task difficulty etc. Competence facilitating environments would comprise of the teacher providing feedback during optimally challenging tasks (Sierens *et al.*, 2009). Haerens *et al.*, (2013) suggest that comments such as ‘well done’ or ‘you played really well’ are practiced used by the teacher that may support competence. Finally an emotionally warm environment can be created by the fostering positive and warm interpersonal relationships between teachers and pupils (Skinner and Belmont, 1993). Examples such as being physically nearby the pupils or making use of the pupils name are all practices that can foster these relationships (Haerens *et al.*, 2013).

This section has presented the underlying concepts and principles of self determination theory. The next section will provide a review of literature that explores the application of Self Determination Theory specifically within physical education based research.

2.5.2 Self Determination Theory and Physical Education

The application of Self Determination Theory within physical education research has had increasing popularity over the past 10 years, with a variety of approaches being adopted including intervention based studies (Prusak *et al.*, 2004; Tessier, Sarrazin and Ntoumanis, 2010), experimental (Mandigo *et al.*, 2008) and observational studies, both cross sectional (Cox., *et al.*, 2007) and longitudinal (Cox *et al.*, 2008) in design. Physical education research that has applied a Self Determination Theory approach explores a variety of relationships, such as that between need support, need satisfaction, motivation and outcomes within and beyond the physical education lesson. Van De Berghe *et al.*, (2012) propose that

future Self Determination Theory research should include a better combination of both pedagogy and psychology in order to formulate practical strategies to enhance students' motivation in physical education. This section will explore some of the existing research that has explored Self Determination Theory within physical education. The literature review is not exhaustive of the extensive body of literature in this area but presents some of the main studies that have addressed some of the consistent findings amongst the research and highlights the methodological approaches and designs that have been utilised.

Firstly, the relationship between need satisfaction and motivation has been addressed in several observational studies (Spray and Wang, 2001; Cox, Williams and Smith, 2007; Cox *et al.*, 2008; Sas-Nowosielski, 2008; Ulrich-French and Cox, 2009) but fewer experimental (Mandigo *et al.*, 2008) and intervention studies (Prusak *et al.*, 2004). In terms of observational research, relationships with self determined forms of motivation have been identified between perceptions of competence, autonomy and relatedness in a range of studies within this context (Spray and Wang, 2001; Koka and Hein, 2005; Cox, Williams and Smith, 2007; Cox *et al.*, 2008; Sas-Nowosielski, 2008; Ulrich-French and Cox, 2009). For example, Standage *et al.*, (2003) examined the interactions between dispositional goal orientations, motivational climate and perceived competence in 12-14 year old boys and girls. The study concluded that the student's perception of a mastery climate was positively related to self determined motivation for physical education through perceived competence, through the mediation of need satisfaction. An observational study by Ntoumanis and Taylor (2007) identified similar mediated outcomes in that students perception of autonomy support, structure and environment within physical education predicted students self determined motivation for physical education. Although the abundance of observational studies provides promising evidence for the relationship causation cannot be established.

One of the few intervention studies provides evidence for the positive impact of autonomy support within physical education (Prusak *et al.*, 2004). A more recent intervention study by Chatzisarantis and Hagger (2009) consisted of a five week

autonomy supportive environment, with 14-16 year old boys and girls. Following the intervention, students reported more autonomous forms of motivation within physical education. In a similar respect a large body of experimental research such as the studies conducted by Mandigo *et al.*, (2008) and Ward *et al.*, (2009) provide additional support for the provision of an autonomy supportive physical education environment for positive motivational outcomes. This provides an insight into findings presented in some of the intervention studies. From exploring the intervention studies it can be noted that most Self Determination Theory based studies focus on enhancing autonomy support, far less research is out there on how to enhance competence and relatedness. It appears that in psychology research there is a strong tradition of experimental studies manipulating just one aspect of the context (e.g. choice), whereas in behavioural research the tradition is to put together as many possible strategies as possible in order to change pupils behaviours. It can be concluded that both approaches have value, the first because they provide evidence regarding the effectiveness of one very concrete strategy, the second because it is ecologically valid, more related to the real life situation.

Relationships between motivation and outcomes within and beyond physical education have also been extensively addressed. Outcomes within physical education have been assessed with respect to affective dimensions such as enjoyment (Ntoumanis, 2002; Ommundsen and Kvalo, 2007; Wang and Liu, 2007; Ulrich-French and Cox, 2009) and boredom (Ntoumanis, 2002; Sas-Nowosielski, 2008), with studies consistently reporting that more self determined forms of motivation within physical education are associated with more positive affective outcomes and decreased negative affective outcomes.

Additionally, motivational outcomes have been examined in relation to motor performance. Motor performance has been assessed by teacher rated protocols (Vansteenkiste *et al.*, 2007; Boiche *et al.*, 2008) or by performance outcomes such as shuttle runs (Mouratidis *et al.*, 2008) or basketball shots (Spittle *et al.*, 2009). Whatever the means of assessment or experimental design; observational (Boiche *et al.*, 2008; Spittle *et al.*, 2009) vs experimental (Vansteenkiste *et al.*, 2007;

Mouratidis *et al.*, 2008) more autonomous forms of motivation are associated with enhanced performance within physical education.

In addition to affective and motor outcomes, behavioural facets have been extensively studied. More self determined forms of motivation for physical education have been associated with increased effort (Ntoumanis, 2001; Ntoumanis, 2002; Ntoumanis, 2005; Boiche *et al.*, 2008; Shen *et al.*, 2010) and engagement (Ferrer-Caja and Weiss, 2000; Ommundsen and Kvalo, 2007; Wang and Liu, 2007) during the lesson. Physical activity within the lesson time is another behavioural factor which has been investigated in previous research. Currently, results concerning the relationship are inconclusive with some studies reporting positive associations between autonomous motivation for physical education and physical activity (Parish and Treasure, 2003; Bryan and Solomon, 2007; Jaakkola *et al.*, 2008) and others finding no significant relationship between the two variables (Ward *et al.*, 2008). Haerens *et al.*, (2010) identified similar positive associations between autonomous motivation for physical education and transfer of learning between physical education and leisure time physical activity. However, as the majority of the studies have utilised subjective methods of physical activity assessment, more conclusive and detailed findings may be apparent by objective physical activity measures in future research. Emerging research has begun to explore these issues in with objective assessments of physical activity during physical education (Aelterman *et al.*, 2012).

The principals underlying Self Determination Theory lends itself to application within Physical Education and particularly to the role of Physical Education for promoting lifelong physical activity engagement. High levels of intrinsic motivation within the Physical Education context suggest that the reasons for participation are not limited to the influence of the environment. Thus, individuals will be more likely to adopt a physically active lifestyle beyond the setting. With this in mind there is an emerging body of research which explores the impact that motivation for physical education has upon a number of behavioural outcomes in the leisure time setting. Firstly, a number of studies have

explored the extent to which motivation impacts intentions to be active in leisure (Dupont *et al.*, 2009; Lim and Wang, 2009; Bryan and Solomon, 2007; Hein *et al.*, 2004; Standage *et al.*, 2003a; Ntoumanis, 2001). The majority of studies have concluded that more self determined forms of motivation within physical education positively predict and/or amotivation negatively predicts intentions to be active within the leisure time setting. However, the extent to which intention translates to action and behaviour in these studies is underexplored. Ntoumanis and Standage (2009) recently expressed a need for future research to focus upon how self determined forms of motivation predict objectively measured physical activity in the leisure time setting. One of the first studies which explored this relationship was done so in the context of a cross-cultural comparison in British, Greek, Polish and Singapore children. Leisure time physical activity was measured by an adapted version of the Leisure-Time Exercise Questionnaire (Godin and Shephard, 1985). Findings of the study noted the significant impact of autonomous motivation for physical education upon leisure time physical activity in British, Polish and Singaporean populations. Examination within the Norwegian context noted similar findings, confirming that intrinsic motivation and perceived competence positively predicted after school physical activity (Ommundsen and Kvalo, 2007).

Cox, Smith and Williams (2008) explored relationships between experiences in physical education and leisure time physical activity. The authors discovered that physical education has the potential to encourage leisure time physical activity by encouraging and fostering autonomous motivation within this context. In a similar vein, an intervention study by Chatzisarantis and Hagger (2009) reported that increasing autonomous motivation for physical education increased intentions to be physically active beyond the school day, which consequently increased self reported physical activity in the leisure time.

Recent work by Haerens *et al.*, (2010), explored concurrent and delayed transfer of learning in relation to self determined forms of motivation for physical education in a sample of university students. In terms of concurrent transfer of learning, amotivated individuals were least likely to report transfer of learning.

Students with more autonomous forms of motivation for physical education were more likely to engage in sports activities outside of school, even when controlled for overall motivation to be active and grades for PE. The authors suggested that further research should incorporate objective measures of physical activity, in the context of physical education and beyond the school day. Moreover, examining the relationships in school age children may diminish any errors that result from an inability to recall information. Lonsdale *et al.*, (2009) utilised pedometers to explore associations between self determined situational motivation within physical education and objective measures of physical activity in a structured physical education lesson and free choice activity. It was identified that pupils high in self determined forms of motivation engaged in more physical activity in both contexts. The aforementioned study by Aelterman *et al.*, (2012) provides an example of relatively new research that has explored associations between objective measures of physical activity within the physical education lesson itself and motivation for physical education. It was identified that pupils with more autonomous forms of motivation engaged in more moderate to vigorous physical activity during the physical education lesson. Similar patterns were identified in adolescent boys with respect to physical activity during physical education and leisure time physical activity when accelerometers were used as the method of assessment (Owens *et al.*, 2013).

This section has sought to explore the application of Self Determination Theory specifically within physical education by drawing upon some of the extensive body of literature to highlight key findings and experimental designs within this area. As acknowledged within the introduction Van De Berghe *et al.*, (2012) suggests that a better integration of psychology and pedagogy is warranted in future research in order to develop effective practical strategies. The next section will seek to explore literature that has addressed the application of Self Determination Theory in relation to body image.

2.5.3 Body Image and Motivation

Although Self Determination Theory does not explicitly examine relationships between body image and motivation, Deci and Ryan (2000) discuss how struggles

for body control maybe due to a lack of self determination. Based upon this premise Thogerson-Ntoumanis and Ntoumanis, (2006) suggest that if an individual exercises for enjoyment reason, they are less likely to be concerned with how others perceive their bodies. In opposition, if an individual's behaviour is regulated by controlling factors, such as a need to gain social approval from others, they are more likely to be concerned about their physical appearance.

In the context of body image, behaviour may be regulated through introjected means when engagement is for the purpose of social approval or when engagement is to support conditional self worth, based upon the attainment of a socio-culturally defined body (Thogersen-Ntoumanis and Ntoumanis, 2007). An individual exercising for weight related reasons because they have external socio-cultural pressures to be slim would be defined as introjected regulation . However, the same motive could be classified as identified regulation if an individual perceives the personal value in being slimmer. The differences between the two motives lie in the relative degree of autonomy. However, Ingledew and Markland (2006) suggest that appearance and weight related motives were associated with external regulation and increased introjected regulation. Moreover, exercising through externally imposed health pressures and to manage weight undermines self determined motivation (Markland, 1999).

Preliminary work, has addressed relationships between body image, motivation and physical activity, through a Self Determination Theory perspective (Gillison, Standage and Skevington, 2006; Thogersen-Ntoumanis and Ntoumanis, 2006; Thogersen-Ntoumanis and Ntoumanis 2007; Brunet and Sabiston, 2009; Gillison, Standage and Skevington, 2011). A study of female exercise participants utilised self determination theory as a guiding framework to examine relationships between exercise motives and physical self esteem (Wilson and Rodger, 2002). The study identified that only autonomous exercise motives were associated with higher levels of physical self esteem. Further to this, work by Gillison *et al.*, (2006) revealed that social physique anxiety was a positive correlate of extrinsic exercise goals for adolescent girls within the leisure time setting. This subsequently negatively predicted self determined forms of motivation.

The outcomes of a study of 375 health club goers identified that introjected regulation positively predicted social physique anxiety and intrinsic motivation negatively predicted social physique anxiety (Thogersen-Ntoumanis and Ntoumanis, 2006). The same researchers also obtained similar outcomes when investigating body image concerns in aerobic instructors (Thogersen-Ntoumanis and Ntoumanis 2007). The results indicate that introjected regulation significantly predicted body image concerns and social physique anxiety. However, autonomous forms of motivation did not significantly predict body image concerns or social physique anxiety in the same sample.

A more recent study investigated how differences in perceptions of the body and motivation for exercise influenced changes in adolescent leisure time exercise (Gillison, Standage and Skevington, 2011). The results identified that those classified as exercise maintainers over a 10 month period, had higher body satisfaction than those classified as 'drop out exercisers' 'take up exercisers' and as 'inactive'. Moreover, exercise maintainers reported higher levels of perceived competence, identified and introjected regulation compared to all other groups. Cox *et al.*, (2011) explored relationships between social physique anxiety and motivation in physical education in 15 year old boys and girls. Results of the study were in accordance with the findings identified in the previous studies discussed; negative associations were identified between social physique anxiety and autonomous motivation and positive associations between social physique anxiety and controlled motivation.

Preliminary evidence suggests that regulation of exercise behaviour through controlled motivation is likely to be associated with lower body image and lower body satisfaction, within the leisure time setting. However, there appears to be a lack of research which examines the impact of motivation for physical education, in respect to body image concerns and leisure time activity.

2.6 Perceptions of Competence

This section will provide specific focus on perceptions of competence, which was discussed in the previous section as an antecedent of self determined motivation, by focusing explicitly upon this variable and associations with outcomes within

physical education and relationships with body image and related phenomenon, as this variable is central to some of the studies conducted as part of the present thesis.

2.6.1 Perceptions of Competence in Physical Education

As exemplified in the previous section Self determination theory positions perceptions of competence as an antecedent of self determined motivation. Research suggests that those with higher levels of competence are more likely to be physically active within the leisure time setting than those with lower levels of competence (Stonecipher *et al.*, 1995). More recent investigations suggest that young people's perceptions of competence within physical education influence their enjoyment for physical education and also their physical activity beyond the school day (Carroll and Loumidis, 2001). Similar findings have been established by Cairney *et al.*, (2012), whereby positive associations were identified between perceptions of competence and enjoyment for physical education.

2.6.2 Perceptions of Competence and Body Image

As already established perceptions of competence have shown to influence an individual's engagement in physical education (Bevans *et al.*, 2010). There is evidence to suggest links between an individual's perception of their body from an aesthetic perspective and the functionality of the body from a physical perspective (Abbott and Barber, 2010). Causality orientations theory (Deci and Ryan, 1985), a sub theory of self determination theory can be applied to gain a deeper understanding of the proposed relationship between body image and perceptions of competence. For example Cognitive Evaluation Theory expresses that social factors that are perceived as controlling are likely to influence the basic psychological needs and as a consequence levels of self determined motivation. The pressure that society places upon individuals to obtain a certain physique may lead individuals to engage in physical activity as a means of conformity to improve physical appearance and avoid social evaluations. Thus, engagement for such outcomes is likely to be a form of internal control. As a consequence body satisfaction may be a source of internal control that may undermine motivation to participate in physical activity through the influence upon the basic psychological

needs. This is particularly important, as there is a distinct focus upon the functionality, performance and competence of the body within physical education. Thus, suggesting a complex two way relationship between how an individual feels about their body in terms of aesthetics and how an individual perceives their body can functionally perform. A number of studies have identified positive associations have been identified between perceptions of competence and body satisfaction (Ebbeck and Stuart, 1993; Lyu and Pyo, 2005; Richman and Shaffer, 2000; Greenleaf, Boyer and Petrie, 2009). Thus, an individual's perception of competence within physical education has potential implications for body image disturbance within this context.

2.7 Physically Active Lives: The Role of Physical Education

The primary objective of this section is to explore the role that physical education plays in the adoption of physically active lifestyle. In order to provide a rationale for these explorations, firstly, physical activity recommendations in youth will be presented followed by the health benefits of adopting a physically active life.

2.7.1 Physical activity recommendations in youth

Government guidelines suggests that in order to obtain beneficial health outcomes children and adolescents should engage in at least 60 minutes and up to several hours of at least moderate level physical activity on all days of the week (Department of Health, 2011). These guidelines can be met through accumulation of multiple bouts of activity or achieved through one session alone. A secondary recommendation from the Department of Health (2011) is that on at least three days a week vigorous activities should be integrated, with the aim of enhancing bone health and muscle strength. The final proposal recommended by The Department of Health in 5-18 year olds is the limiting of sedentary periods by reducing screen time and engaging in active transport.

The Department of Health (2011) defines moderate intensity activity as activities which produce increases in heart rate, respiration and sweating, whilst at the same time the individual has the ability to sustain verbal communication. The Department of Health (2011) describes biking and playground activities as two examples of moderate level physical activity. In the same document vigorous

physical activity is described as activities that lead to large and significant increases in heart rate, respiration and sweating which can result in increased difficulty to sustain conversation. The ‘Lets Get Moving’⁹ document suggests that activities such as fast running or swimming fit this intensity category. The term moderate to vigorous physical activity is used predominantly within the extant literature to reflect physical activity engagement of a moderate level and above.

The guidelines for physical activity engagement in England are based upon intervention studies which recommend specific amounts of physical activity needed for necessary changes in health outcomes. Strong *et al.*, (2005) conclude that the majority of intervention studies utilise programmes of moderate to vigorous physical activity of a continuous nature. According to Strong and colleagues (2005) the typical duration of interventions are between 30-45minutes, 3 to 5 days per week. However, the authors recommend in order to obtain similar or greater health benefits in the context of everyday life physical activity engagement should be significantly greater than the results of experimental research indicates (Strong *et al.*, 2005).

Campaigns such as ‘Change for Life’¹⁰ have been employed as a method of directly supporting government recommendations concerning physical activity and thus endeavors to promote physically active youth through the ‘60 active minutes campaign’.

2.7.2 Health benefits of physical activity

Interest in promoting a physically active lifestyle is a result of a growing body of evidence which upholds the health benefits associated with the adoption of such an existence. The risks associated with a physically inactive lifestyle within the adult population are firmly established (Allender *et al.*, 2007). Thus, physical inactivity is viewed as a pressing public health issue. It is widely acknowledged that physical inactivity in adults is associated with an increased risk of developing

⁹ The Lets Get Moving document is evidence based approach to preventing and managing disease. The resources provide information to patients and templates to help with physical activity

¹⁰ Change for Life is a campaign in the UK that aims to get people to eat well, move more and live longer.

several chronic diseases such as obesity, diabetes (Jeon *et al.*, 2007), osteoporosis (Wolman, 1994) coronary heart disease (Blair *et al.*, 1989) and some forms of cancer (Thune and Furberg, 2001). Consequently, there is an inverse association between physical activity and longevity within this population (Paffenbarger *et al.*, 1986). It is estimated that 1.9 million deaths globally can be attributed to physical inactivity and subsequent hypokinetic disease (Chief Medical Officer, 2009).

Associations between physical activity behaviours and health outcomes are also apparent within children and adolescents (Boreham and Riddoch, 2001). Links have been established between an inactive lifestyle and an increased risk of overweight and obesity in youth (Patrick *et al.*, 2004). These associations with weight status lead to an increased possibility of developing cardiovascular risk factors (Weiss *et al.*, 2004). Thus, it appears that the links between physical activity and cardiovascular disease risk factors are similar in youth and adults. Mainly because of tracking, children who are physically active remain active in later life and are therefore at lower risk for health problems in adulthood.

This is of particular importance as the origins of coronary heart disease are known to be established within childhood (Bridger, 2009). In addition to these physiological benefits associated with a physically active youth are the implications for psychological well being. A physically active adolescent is more likely to have higher self esteem (Schmalz *et al.*, 2007) and lower rates of depression (McKercher *et al.*, 2009). Moreover, habitual physical activity in youth has positive connotations for bone health and subsequent osteoporosis (Grimston *et al.*, 1993).

The adoption of a physically active lifestyle in youth is not only fundamental for the attenuation of cardiovascular risk factors but also for the direct and indirect implications that engagement has for adult health (Blair *et al.*, 1989). Directly, regular physical activity in youth has the potential to improve a young person's health profile, which has been shown to influence health outcomes in later life (Bridger, 2009). Moreover, increased physical activity in childhood has the potential to track into adulthood, thus, indirectly influencing adult health (Blair *et*

al., 1989). Based upon the emerging evidence that physical activity behaviours track into adulthood physical activity interventions should be targeted at youth with the aim of promoting current and future positive physical activity behaviours (Boreham and Riddoch, 2001). The Leisure time exercise questionnaire (Godin and Shephard, 1985) has been utilised by Neumark-Sztainer and her colleagues in their investigations of relationships between body image and physical activity in adolescents (Neumark-Sztainer *et al.*, 2003; 2006). Other research exploring these relationships has utilised a four-by-one day interviewer administered questionnaire (Duncan *et al.*, 2004) or other self report questionnaires such as The Physical Activity Questionnaire for Adolescents (PAQ-A; Kowalski, Croker and Kowalski, 1997).

In comparison to questionnaires activity diaries have a relatively high participant burden. They require participants to report specific activities within a predetermined period of time. Thus, it is suggested that the results of activity diaries in adolescents should be interpreted with caution (Sirard and Pate, 2001). It is thought that the high participant burden may influence behaviour. Moreover, epochs as short as 15 minutes are thought not to be long enough to capture the sporadic nature of activity in young people and a decreased epoch would mean further enhanced participant burden (Bratteby *et al.*, 1997).

Interviews generally require participants to recall information on the characteristics of their physical activity behaviours from the last one to seven days. It has been established that a one day recall of information provides a more valid assessment of physical activity than recall of information for more than one day (Sirard and Pate, 2001). Additionally, it has been concluded that interview administered methods have higher validity than self administered approaches (Corder *et al.*, 2008). Physical activity interviews are subject to similar limitations of questionnaires; however, they have an enhanced researcher burden.

A systematic review conducted by Adamo *et al.*, (2008) highlighted one of the main issues associated with self reported measures of physical activity in children and adolescents. It was concluded that in 72% of the studies MVPA was significantly over rated in comparison to objective measures. Objective measures

of physical activity are those that either measure energy expenditure such as accelerometers or physiological responses to physical activity such as heart rate monitors. Thus, future research should attempt to utilise objective measures of physical activity

2.7.3 Current levels of Physical activity in youth

‘The principle of least effort’ postulates that all individuals naturally adopt a path of least resistance. In terms of human movement this suggests that individuals seek to obtain an outcome by the least amount of energy expenditure and effort possible. In an increasingly industrialised and mechanised society it is clear to see that adopting a path of least resistance is a straightforward and naturally attractive option.

The role of physical activity in daily routines has declined over recent years (Chief Medical Officer, 2009). Individuals employed in inactive professional roles have increased, alongside declines in active jobs (Chief Medical Officer, 2009). Changes in transport patterns over time have seen the adoption of sedentary travel methods and a subsequent decline in walking and cycling (Chief Medical Officer, 2009). Moreover, increases in sedentary past-times such as computers and televisions increase the opportunities to conserve energy. Thus, children and adolescents are evermore-so frequently faced with the choice of sedentary or active pursuits. Innately children are the most physically active portion of the population (Sallis, 2000). However, there is a growing level of concern over physical activity levels of children and adolescents. This is a consequence of studies reporting dramatically low levels of physical activity (Health Survey for England, 2008). As a result, many government strategies have been put in place to address the issue of increasing sedentary behaviours within youth (Department Of Health, 2005; 2008).

Despite the established health benefits of physical activity research suggests that a relatively low number of children are sufficiently active for health. The Health Behavior in school aged children (HBSC) study incorporated self report physical activity data from the USA and over 30 European countries (Roberts *et al.*, 2004). The study concluded that 34% of 11-15 year olds met government activity

recommendations. A 2007 survey of American 15-18 year olds reported similar rates of activity, with 34.7% of participants being deemed sufficiently active for health (Li, Treuth and Wang, 2010). A more recent survey of over 72,000 boys and girls aged 13-15 years from 34 countries concluded that 23.8% of boys and 15.4% of girls met the 60 minute guidelines (Guthold *et al.*, 2010). Data derived using accelerometers presents far more inconsistent results, due to the variability in MVPA thresholds. For example a study of 12 year old boys and girls in the UK reported that a mere 5.1% of boys and 0.4% of girls achieved at least 60 minutes of MVPA on each day (Riddoch *et al.*,). However, other cross sectional studies in the UK reported the achievement of sufficient activity for health in 81.5% (Steele *et al.*, 2009) and 76% (Owen *et al.*, 2009) of boys and 59.4% (Steele *et al.*, 2009) and 53% (Owen *et al.*, 2009) of girls.

In contrast the Health Survey for England, 2008 suggests that 21% of girls and 33% of boys aged 2-15 years are meeting these guidelines. The study also confirmed patterns of increasing physical inactivity are apparent as boys and girls pass through the adolescent years (Health Survey for England, 2008).

Astonishingly, a mere 7% of boys aged 11-15 are deemed sufficiently active for health (Health Survey for England, 2008). Of greater concern are reports that fewer girls are meeting government physical activity recommendations, with the Health Survey for England (2008) reporting that all of the girls aged 11-15 within the study failed to obtain 60 minutes of at least moderate activity each day. With this in mind, interventions aiming to increase and promote youth physical activity have been common place over the past decade (Sallis *et al.*, 1997; Ridgers *et al.*, 2007). The next section will go on to explore the potential role that physical education can play in promoting physical activity.

2.6.5 The role of physical education in encouraging an active lifestyle

School based interventions are an appealing option for physical activity promotion in youth. Schools offer a 'captive audience' at a critical age where lifelong behaviours are in formation. Schools remain the central focus of physical activity intervention programmes due to their universal reach (Sallis and McKenzie, 1991). Critically, the school environment offers a delivery structure in the form

of physical education. With this in mind, schools and more specifically physical education have been acknowledged to have primary responsibility in the creation of positive physical activity behaviours in childhood (Cale and Harris, 2006).

School based interventions have focused on encouraging engagement in physical education and enhancing activity levels within physical education and beyond the school day (Sallis *et al.*, 1997; McKenzie *et al.*, 2004). Not only has school physical education been noted as an important vehicle through which to promote childhood activity but it is also assumed to play a significant role in promoting activity behaviours throughout the lifespan (Shephard and Trudeau, 2000).

Shephard and Trudeau (2000) propose that long term health is the most significant objective of physical education and should be the focus of school based programmes. Similarly, Evans and Davies (2010, pg 768) put forth the proposition of the role of physical education ‘to affect the dispositional resources (motivation/attitudes/willingness/desire/fundamental cultural capitals) of pupils performance or participation in sport in and out of school’.

For the objective of lifetime physical activity to be effective transfer of learning needs to occur. Transfer of learning is the process whereby learning acquired in one context (such as school) influences learning or is put to use in a different context (Macaulay, 2000). Physical Education seeks to support transfer of learning, to equip children with the skills to be physically active beyond the school day with the desire of establishing physical activity as a lifetime habit. It is argued that transfer of learning occurs from the classroom to beyond the school day (concurrent transfer) and also after students have left school, through the lifespan (delayed transfer). Transfer of learning remains the ultimate goal of any educational programme; however, the achievement of this transfer process has been deemed problematic (Macaulay, 2000). The metaphor ‘transfer of learning’ has been applied within the academic literature to refer to the process of learning in one context which is applied in a different context. Physical Education seeks to support transfer of learning, to equip children with the skills to be physically active beyond the school day with the desire of establishing physical activity as a lifetime habit. It is argued that transfer of learning occurs from the classroom to

beyond the school day (concurrent transfer) and also after students have left school, through the lifespan (delayed transfer) (Haerens *et al.*, 2010).

From a cognitive mediation paradigm perspective the link between teacher behaviour and student learning is indirect (Solomon, 2008). As a result, the teacher does not directly cause learning but rather facilitates the process by creating environments which encourage learning (Solomon, 2008). Thus, it is thought that factors intervene in the process to impact the outcome of transfer of learning. Understanding the processes that contribute to transfer of learning allows for the development of strategies within physical education that can encourage the transitional process of a physically active life.

It is argued that the type of activity within physical education can impact physical activity levels in later life (Fairclough, Stratton and Baldwin, 2002). However, little research has examined the same approach in relation to boundary crossing between school and leisure time physical activity. Recommendations have been put forward to suggest that physical education lessons should focus upon lifetime activities as oppose to traditional team games (Sallis and McKenzie, 1991). Lifetime activities such as swimming and running are those which can be easily transferred into adult life as they require little organisation (Fairclough *et al.*, 2002). On the other hand, team games generally require specialised equipment and more participants, therefore are suggested to have less likelihood of transfer (Fairclough *et al.*, 2002). A survey of adult physical activity participation upholds these suggestions, revealing that four out of the five most popular activities in adults can be defined as lifetime activities (Office for National Statistics, 2004). Thus, a discrepancy appears between the team games children frequently experience in physical education and the type of activities experienced in later life, suggesting that direct boundary crossing, of the specific skills learned in physical education is not occurring. This argument warrants the need for exploration of relationships between activity type and boundary crossing into leisure time physical activity. Understanding the processes concerned with boundary crossing allows for the development of strategies within physical education that can enhance transfer into leisure time and throughout the lifespan.

This puts into context the wider potential of physical education not just to stimulate activity beyond the school day (as will be a focus of this study) but throughout the lifespan.

In summary, this section puts into context the potential role that physical education can play in stimulating physical activity beyond the school day and the notion of concurrent transfer of learning that will be explored further in the thesis.

Chapter 3: Research Questions

The previous chapter presented a review of literature in relation to a number of key concepts, namely body image, Self Determination Theory, perceptions of competence and transfer of learning. The literature review presents an exploration of some of the key studies that have explored these aspects within the context of physical education. The research questions presented below draw upon some of the significant gaps in the literature within this area. In summary gaps in the literature initially emerge in relation to body image. In this regard a focused exploration of this construct in this context is the key contribution that the thesis will make to the existing body of literature. Moreover, this thesis and the proceeding questions will combine this unique contextual exploration of body image in relation to the other key concepts presented in the literature to further understanding in this field.

The overarching aim of this thesis is to explore relationships between body image, perceptions of competence and motivation, with specific attention paid to the influence of the physical education environment upon one's experiences of their body. Secondly, this research will seek to explore the role that these three psychosocial constructs play in transfer of learning between school physical education and the leisure time setting.

There are nine research questions which underpin this thesis and focus upon gaining a greater understanding of young people's experience of physical education in relation to the three identified psychosocial variables.

The first five questions focus upon the distribution of body satisfaction scores between physical education classes and between pupils. These questions will explore the influence of personal and situational factors upon students' experience of their body. Research question six then looks at the relationships between the three psychosocial variables. Research question seven sets to explore the hypothesis underpinning Self Determination Theory; by exploring the proposition of perceptions of competence being an antecedent of self determined motivation. The penultimate research question moves beyond the physical education class into the leisure time setting, investigating the potential impact of all three psycho-

social variables upon transfer of learning. The final research question seeks to explore relationships between body satisfaction and students physicality.

Research Question 1

What are the characteristics of attitudinal and perceptual body image disturbance in year 9 boys and girls?

Research Question 2

Are there between pupil and between class differences in the body satisfaction scores of 13-14 year old pupils within physical education? (If between class variance in body satisfaction is high, class level factors are more likely to play an important role and leads to the exploration of research question 3)

Research Question 3

Does physical education content relate to body satisfaction within physical education?

Research Question 4

Does students' body fat/BMI relate to body satisfaction within physical education?

Research Question 5

Does students' body satisfaction within physical education relate to sex, socioeconomic status and ethnicity?

Research Question 6

Does body satisfaction within physical education relate to perceptions of competence, autonomous motivation, amotivation, controlled motivation after controlling for sex?

Research Question 7

Does perceptions of competence relate to different types of motivation for physical education?

Research Question 8

Does perceived competence, motivation for physical education and situational body satisfaction relate to transfer of learning?

Research Question 9

Does body fat have relationships with transfer of learning, after controlling for sex?

Chapter 4 Research Methodology

4.1 Introduction

This chapter considers the data generation strategies, outlining the main methodological tools and approaches that were used during the fieldwork process. Two key approaches were used in the generation of data; firstly, quantitative data was yielded by the participants' completion of questionnaires across two time points. The quantitative element of the fieldwork was conducted utilising a non experimental, repeated measures, correlational design. Data generated by this approach allowed for the identification of trends and patterns concerned with the three main variables of interest; body image/body satisfaction, perceptions of competence and motivation for physical education. In addition to the quantitative approach, a complementary qualitative data generation technique was also applied, namely, focus group sessions. Not only did this approach act as a means of triangulation but also allowed a more in depth exploration of the emerging trends represented in the quantitative technique.

4.2 Research Design

The methodology utilised in this research was a mixed method approach. Mixed methods research can be defined as an approach that 'combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative view points, data collection, analysis, inference techniques) for the broad purpose of breadth and depth of understanding and corroboration' (Johnson *et al.*, 2007, pg 123). This must not be confused with multi-methods research that uses combinations of methods that result in the same kind of data (Teddle and Tashakkori, 2009). Johnson and Onwuegbuzie (2004) argue that quantitative educational researchers seek to remove bias from their research and empirically justify a hypothesis, whilst remaining emotionally detached from their study. On the other hand, qualitative researchers argue that explanations in data are generated inductively. The underpinning of mixed method research is one of pragmatism as oppose to constructivism and positivism underpinning qualitative and quantitative research, respectively. Johnson and Onwuegbuzie (2004) argue that the nature of the debate between quantitative and qualitative researchers is such that some early career researchers have the impression that allegiance needs

to be pledged to either a qualitative or a quantitative school of thought. However, mixed methods research accepts that both approaches have utility.

There has been some opposition to the use of mixed methods research due to the perceived lack of incompatibility of the underlying paradigms in quantitative and qualitative research the incompatibility thesis argue that the differences in quantitative and qualitative approaches are so different that the methods cannot be mixed (Howe, 1988). However, the pragmatic underpinning associated with mixed method research argues that research should be focused on addressing the best ways to answer research questions, thus, the research is not committed to one philosophical position but the research issue presented. As a result, the underpinning for the mixed method approach utilised in the current thesis is based upon positioning the research questions at the centrality of the research design. At the start of the research process it was anticipated that a mixed method approach would be the best approach to answer the proposed research questions than would either a qualitative or quantitative approach individually.

Teddlie and Tashakkori (2009) propose that there are eight contemporary characteristics of mixed method research that can be used to provide an insight into the characteristics of the research approach adopted in the current thesis. The first definition proposes that mixed method research consist of *methodological eclecticism*. In line with the definition put forth by Teddlie and Tashakkori (2009), the mixed method approach adopted in the study can be defined as methodological eclecticism. According to the authors methodological eclecticism goes beyond the approach of combining quantitative and qualitative research to merely achieve cancelling out the weaknesses of each approach, to a process which involves ‘selecting and then synergistically integrating the most appropriate techniques myriad of qualitative, quantitative and mixed methods in order to more thoroughly investigate a phenomenon of interest, in this case the body within physical education (Teddlie and Tashakkori, 2009, pg 286). The second characteristic of mixed method research put forth by the authors is *paradigm pluralism*, described as the belief that a variety of paradigms may serve as the underlying philosophy for the use of research methods (Teddlie and Tashakkori,

2009, pg 287). The third characteristic of mixed method research is *an emphasis on diversity at all levels of the research enterprise*. This characteristic suggests that mixed method research can address both confirmatory and exploratory questions and thus due to the fact that information can be obtained from different sources, greater insight can be provided into an issue. The fourth characteristic of mixed method research is proposed to be *emphasis on continua rather than a set of dichotomies*, which proposes that options are used as a replacement for ‘either-or’. The proposed fifth characteristic of mixed method research suggests an *iterative, cyclical approach to research*, involving both deductive and inductive logic. A *focus on the research question (or research problem) in determining the methods employed within any given study*, is the sixth characteristic of mixed method research and suggests that methods are chosen based upon those that are best suited to answering the research questions. The seventh characteristic can be described as *a set of basic “signature” research designs and analytic processes*, which refers to a unique design and analysis process specifically for mixed methods research. The final characteristic outlined by Teddlie and Tashakkori, (2009) is *a tendency toward balance and compromise that is implicit within the “third methodological community*, which suggests that mixed methods approaches are about generating balance between the extremes of qualitative and quantitative research. Thus, these characteristics provide an outline for the characteristics of the current research.

The mixed method approach of the current study is obtained by a combination of quantitative methods, such as psychological questionnaires and anthropometric assessments combined with qualitative techniques such as focus groups and personal narrative. The personal narratives presented at the start and end of the thesis provide not only an insight into my personal motivations for the study but act as an anchor upon which to subjectively interpret my findings. The quantitative methods and analysis allow for a certain level of objectification in the interpretation of the results. However, the narratives provide a contrasting subjective interpretation that allows me to progress beyond some of the limitations associated with quantitative research. The personal narratives are presented by means of adding a different mode of interpretation to the findings.

The deliberate absence of my voice from the main body of the text can be attributed to the difficulties associated with being a mixed method researcher and the subsequent negotiations of writing styles throughout the thesis. The writing style of quantitative research is often characterised by an impersonal, passive voice, whereas, the writing style of qualitative researcher is often less formal and more empathic. I have found myself negotiating the preferences of each style, which is evident in the contrast of writing styles presented throughout the thesis. The main predominantly quantitative body of the thesis is 'sandwiched' between two qualitative personal narratives. The juxtaposition of the two writing styles offers an insight into my own personal negotiations of being a mixed method researcher and adhering to the acceptable writing style of each methodological perspective. The shift between personal, impersonal and back to personal throughout the thesis highlights my adherence to the requirements of each standpoint. The almost bipolar style of my writing can partly be attributed to the lack of belonging and community associated with being a mixed method researcher and my anticipation that if each style strictly adheres to the expected requirements of each perspective then I would have a certain level of acceptance from each community. My observations are that most researchers operate within the confines of their school of thought and not being able to categorise myself within either group has often lead to issues in relation to acceptance. Throughout the research process I have often been categorised by quantitative researchers as a qualitative researcher and vice versa, I have felt a categorisation of an 'other' from both groups during the process which has often lead me to question my standpoint. As detailed earlier the notion put forth by Johnson and Onwuegbuzie (2004) that as an early career researcher it is often the case of pledging allegiance to a particular school of thought. This has presented many issues to myself as a researcher as I have at times considered myself to be guilty of 'sitting on the fence' and have sometimes questioned if my standpoint is due to a lack of confidence in committing myself to a particular approach. However, I always come back to the same thinking that if there is a gap in the research there are certain approaches that allow us to explore a research issue more effectively and

to limit yourself to a particular perspective would not provide you with a full understanding of the issue.

In conclusion, the mixed method framework of the study provides a pragmatic underpinning to the thesis but the unanticipated personal battle between quantitative and qualitative and my desire for belonging as a researcher provide the reader with an insight into my own personal struggles and negotiations that go far beyond the research questions and selecting the appropriate methods.

4.3 Research Context

4.3.1 The Schools

The study population was drawn from four schools. Four schools completed quantitative measures at time point one and time point two. The focus group sessions were conducted with 15 pupils (8 males, 7 females) drawn from six of the physical education classes at one school (due to issues with compliance from schools that will be discussed later in this section). The four schools are profiled below.

School One

School one is a comprehensive mixed school for 13-19 year olds, located within the Bedfordshire region. The school has had specialised sports college¹¹ status for approximately 10 years and is also an international school. Approximately 1109 pupils attend the school and is described in the recent Ofsted report to be a larger than average school. The Ofsted report also acknowledges that over half of the pupils from the school are from minority ethnic groups, with the largest proportion being of Pakistani or Bangladeshi origin. There is also a higher than

¹¹ A sports college is the status given to schools that have a specialism of sport. It was part of the Specialist Schools Programme, an initiative set up by the UK government, in which schools could apply for specialism in a number of areas such as technology, language and sports, with the aim of enhancing pupil performance within the area of specialism. The initiative ended in 2010. Achievement of sports college status was through an application process in which the school could demonstrate reasonable standards of achievement in that area and led to extra funding for pupil development in that specialism.

average eligibility for free school meals at the school. The proportion of students with special educational needs and/or disabilities is higher than average.

School Two

School one is a comprehensive mixed school for 13-19 year olds, located within the central Bedfordshire region. The school is a specialist sports college and consists of approximately 1382 pupils. The schools most recent Ofsted report notes that students in the school are predominantly from White British backgrounds, with around six percent of pupils coming from minority ethnic groups. The report also notes that the proportion of children eligible for free school meals and the proportion of children with learning difficulties and disabilities is below average.

School Three

School three is a mixed school for 11-18 year olds, located within outer London. The school is a specialist sports college and consists of approximately 1,157 pupils. The schools recent Ofsted report notes that half of the schools population are from a range of minority ethnic groups, with the highest proportions coming from Indian, Pakistani, Somali and Eastern European backgrounds. The report also notes that a large proportion of the students are eligible for free school meals and have special educational needs.

School Four

School four is a large comprehensive mixed school for 11-18 year olds, located within the city of Peterborough. The school has specialist status in sports and languages. The school consists of approximately 1650 pupils. The schools most recent Ofsted report details the percentage of children from minority ethnic groups to be above the national average, as is the percentage of children with special educational needs. The report outlines that the percentage of children eligible for free school meals is predominantly in line with national average but describes the location of the school to be set in an area of high social deprivation.

4.3.2 The Participants

Figure 4 presents information of the sample used for this thesis and the subsequent breakdown of samples utilised within each data chapter of the thesis. The figure shows that the overall sample consisted of 990 pupils (54.2% male, 55.8% female) across all time points. These pupils were drawn from 51 physical education classes from the aforementioned four schools. At time point one, 37 physical education classes completed the questionnaires. This sample consisted of 620 pupils (53.2% males, 46.4% females) that completed at least one aspect of the questionnaire package. The pupils were drawn from 18 all male classes, 18 all female classes and 1 co-educational class. At time point one the pupils were also asked to complete information on socioeconomic status and ethnicity. This information was obtained for 512 and 638 pupils for socioeconomic status and ethnicity, respectively (information on the sex breakdown of these samples can be found in figure 4). The sample consisted of 65.8% white pupils, 19.4% Asian pupils, 8.2% mixed race pupils, 5.6% black pupils and an additional 0.9% pupils that classed themselves as 'other'. From the 37 physical education classes, 16 classes took part in anthropometric assessments. The sample consisted of 159 pupils (51.6% male, 48.4% female). Due to issues associated with access to the pupils not all pupils in all 37 classes underwent anthropometric assessments, the number of pupils ranged from 1-23 within each class, with an average of 10 pupils within each of the 16 classes undergoing these measurements. This sample was used to explore the data in chapters 5,7,8,9 of this thesis.

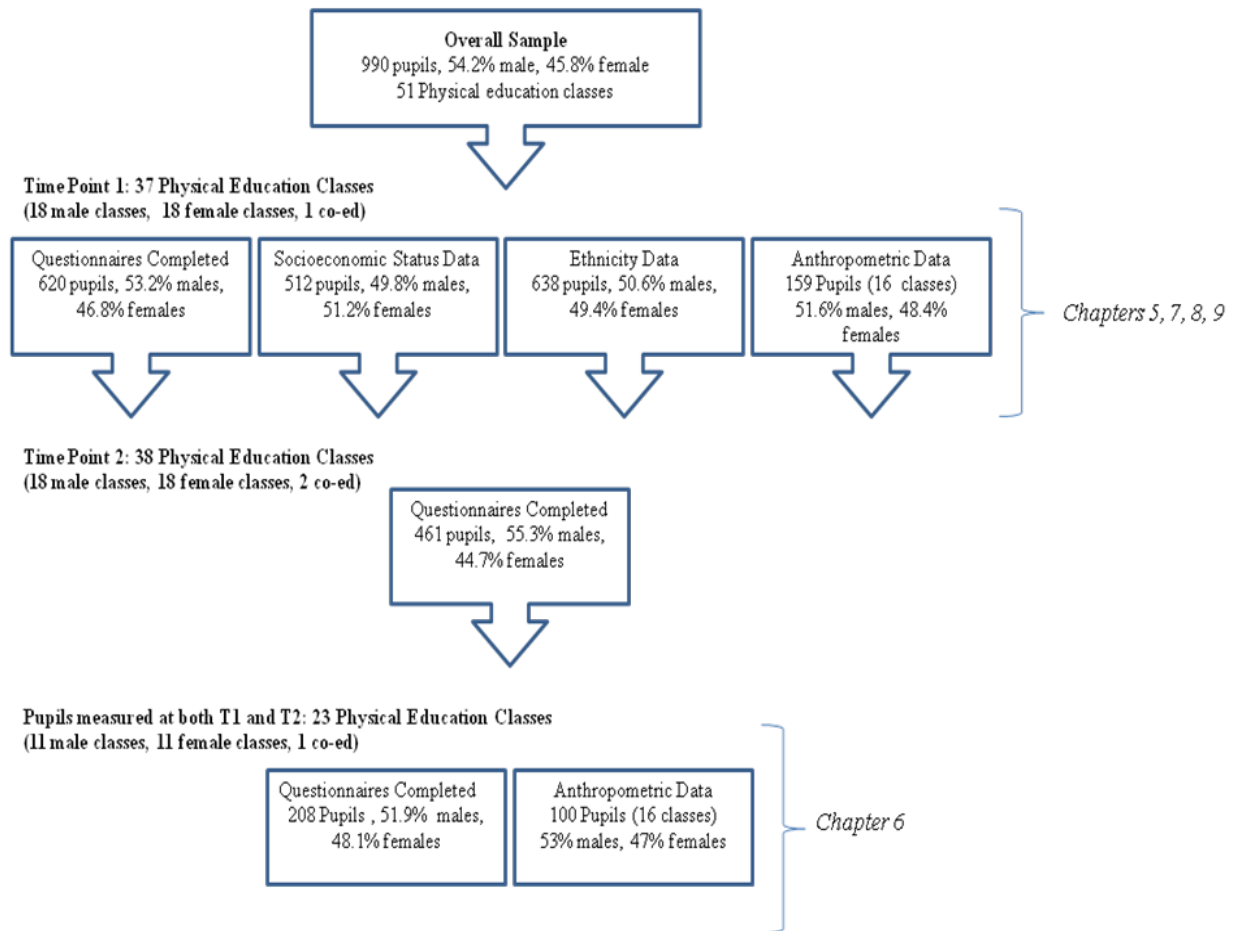


Figure 4: A figure to highlight the samples obtained at each time point and the corresponding chapter in which the data was used.

As highlighted in figure 4 the sample at time point 2 differed from that at time point 1. Firstly, the sample at time point two consisted of 461 pupils (55.3% male, 44.7% female) drawn from 38 physical education classes. The physical education classes were 18 all male classes, 18 all female classes and 2 co-educational class. From the transition from time point 1 to time point 2 a number of things influenced the change in the sample. Firstly, at one school the composition of the classes changed between the two time points, by this I mean pupils were not in a class with the same pupils that they were at time point 1. They may also have experienced changes in the teacher that taught that class. At this school, 12 classes became 13 and the pupils were mixed up, thus accounting for the extra class at

time point 2. This also accounts for the 51 classes denoted in the overall sample, as the changes in composition meant that these classes were numbered as new classes. These changes in the composition of the classes were not anticipated at the start of the study, as we were reassured that pupils would remain in their classes throughout the entire year. As a consequence, this influenced how we planned to analyse the data in order to answer the research questions. This was particularly evident for chapter 6. Only pupils that answered both questionnaires at both time points were included in the analysis for data chapter 6. Although this provided a relatively large sample size of 367, 159 of these pupils were from the school that changed classes between time point 1 and time point 2, thus leaving a sample of 208 pupils from 24 physical education classes for analysis in chapter 6. Overall from time point 1 to time point 2 around 59% of the sample remained the same, with an additional 94 pupils answering questionnaires at time point 2 but not time point 1. As highlighted in figure 4, 100 of these pupils that completed both time point 1 and time point 2 measures also took part in anthropometric assessments at time point 1. With regard to the activities that pupils were engaged in at each time point, table 1 highlights the breakdown of lesson content for time point 1 and table 2 depicts the breakdown of lesson contents at time point 2.

Table 1: The breakdown of physical education classes by lesson content for all pupils, single sex male classes, single sex female classes and co-educational classes at time point 1 (T1)

	All	Boys	Girls	Mixed
Ball Games T1	29	13	15	1
Racket Sports T1	0	0	0	0
Artistic T1	4	2	2	0
Fitness T1	4	3	1	0
Total Classes	37	18	18	1

Table 2: The breakdown of physical education classes by lesson content for all pupils, single sex male classes, single sex female classes and co-educational classes at time point 2 (T2)

	All	Boys	Girls	Mixed
Ball Games T2	4	3	1	0
Racket Sports T2	5	2	3	0
Artistic T2	16	8	8	0
Fitness T2	5	1	4	0
Leadership T2	8	4	2	2
Total Classes	38	18	18	2

Prior to data collection ethical approval was granted from the University of Bedfordshire and CRB clearance was obtained. From each of the schools all children from year 9 were invited to participate in the study. Parents/carers of all year 9 pupils at all schools received an information sheet and information regarding how to opt out of the study. All participating year 9 pupils at each school also received an information letter and completed an informed ascent letter prior to participation.

Participants were asked to respond to a questionnaire during two units of physical education, responding to the items in the context of their current unit of activity. Questionnaires were completed during a physical education unit and the lesson content for the individual class was recorded.

With respect to recruitment of participants, all pupils at all schools received an information letter outlining the purpose of the study, the methods involved, the right to withdraw, the storage and use of data and also contact details for additional information or queries, in accordance with the University of Bedfordshire's ethical procedures. Parents were asked to return the slip attached to the letter if they had objections against their child participating in the study. This method of recruitment was decided upon after initially trying to recruit participants by asking parents to return the form if they wanted their child to participate. This approach yielded very little uptake from parents, in the first school that was approached only 3 children in the entire year group returned consent forms. It was decided that due to the research design of the study and the

need for a distribution of pupils across classes that an ‘opt out’ approach would be preferable and ethical approval was subsequently gained for this change in the recruitment process. In addition to informed consent, ascent was also obtained from the pupils. The participants received their own version of the information letter, written in age appropriate language and were asked to sign the form if they agreed to take part.

4.4 Research Methods and Procedures

This section will address the rationale for the selection of data collection methods used throughout the data generation process. The procedures associated with each approach will also be discussed.

4.4.1 Body Image Assessment

4.4.1.1 Rationale for the selection of body image assessment tools

As detailed in the introduction of this thesis, there is an array of definitions associated with body image, and consequently numerous measures to assess the different components. As Cash *et al.*, (2002) note, body image is not a stable construct and does have cross-situational variability. The concept of body image as an unstable construct is what underpins the rationale for the exploration of the research questions. However, Cash *et al.*, (2002) describes the lack of psychometrically sound measurement tools available to capture such situational variability, with trait measures often being adapted to the needs of the context.

With this in mind, an adapted version of the Body Image States Scale (BISS) (Cash *et al.*, 2002) was used to measure state variations in affective body image as a result of temporal fluctuations. The original BISS scale is sensitive to positive and negative contextual variations (Cash *et al.*, 2002). The BISS is a six item scale, presented on a 9 point Likert scale. It is used to assess an individual’s affect and evaluation of their physical appearance at one particular moment in time. The BISS has acceptable convergent validity with other measure of trait body image within college age students (Cash *et al.*, 2002). Moreover, Construct validity of the scale has been established in adults (Cash *et al.*, 2002) Adapted versions of

the BISS have been previously used with excellent internal reliability in adolescent girls (Bell, Lawton and Dittmar, 2007).

The scale was adapted to suit the context of the physical education lesson. For example, on the original scale participants were asked to respond to the six items with the string 'right now, as this very moment'. For the purpose of this study, the string was adapted to read 'during your current activity within physical education'. As the participants had previously reported their current activity, the question was thus conceptualised as such. It is argued that slight changing in the wording of body image questionnaires is 'good science', and should be done in order to have the right scale to assess the research question (Thompson, 2004).

A pilot study was conducting prior to the main study in order to assess if the scale was at an appropriate level of comprehension for the main study population. The pilot study was conducted with 19 (12 males, 7 females) year 8 pupils. Year 8 pupils were utilised for the pilot study, as the target population for the proceeding studies will be year 9 pupils. This allowed for the consideration of different levels of comprehension within a year group. Pupils were asked to complete the scale and report any difficulties that they found with comprehension. The outcomes of the pilot study were that pupils were able to sufficiently understand the questionnaire and reported no difficulties in completion.

In addition to assessing the situational variability of the construct, it was felt that the literature strongly emphasised the importance of assessing both the perceptual and attitudinal components of the construct. To my knowledge, there is no such easily accessible method of situational perceptual distortion available. Thus, a trait measure was used. This allowed for an insight into the relationship of attitudinal and perceptual components of the construct in relation to some of the key variables of interest. Thompson (2004) recommends the use of multiple body image measures.

The BMI-based Silhouette Matching Test was selected as the most appropriate measure, as it is the only known figural rating scale available for this population, which captures both components (Peterson *et al.*, 2003; 2004). The measure is a

figural rating scale derived from anthropometric data of 9th-12th grade Canadian male and female adolescents (Paterson *et al.*, 2003). Figural rating scales are one method used to assess global body satisfaction in adolescents and consist of a number of figures ranging from thin to overweight. In order to determine body satisfaction participants select the figure which represents their current size and also the figure which represents their ideal size. The discrepancy between the two is a representation of body satisfaction. Uniquely, this scale also has the potential to measure body size distortion as the drawings are based upon BMI data. Figural rating scales are the most commonly adopted measure for assessing this component of body image (Gardner and Brown, 2010). They provide a tool which is relatively quick and easy to administer. However, these scales have been criticised for being too coarse. Individuals choose from a limited amount of images but the variable itself is continuous (Gardener, 2001). The BMI-based Silhouette Matching Test attempts to overcome these shortcomings by providing a 27 interval scale in between the figures.

The scale consists of 4 silhouette drawings with a 27 interval scale, with good test-retest reliability for current (.79-.85) and ideal (.82-.83) choices. Convergent (.76-.84) and concurrent validity (.86-.95) has been established within a sample of college undergraduates (Peterson *et al.*, 2004).

4.4.1.2 Trait measures methods

Participants were presented with a gender scale consisting of four silhouette drawings with a twenty seven interval scale at initial baseline data collection. Each box along the scale coincides with a BMI score ranging from 14 to 40. The four silhouette images provide visual reference points and represent BMI values of 18, 24, 30 and 36. Participants were asked to place an 'X' in one of the twenty seven boxes on the scale which best reflects their current appearance. This BMI value obtained associated with the selected box was compared with actual BMI scores in order to determine a measure of body distortion (perceptual body image).

Participants were then be asked to place an 'X' in one of the twenty seven boxes along the scale which best represents the appearance they would most like to look

like. This value was compared with the individual's perception of their current appearance in order to obtain a value of body satisfaction (attitudinal body image). The value obtained was either positive neutral or negative, depending upon the direction of body dissatisfaction. For example, if the individual desired a larger or smaller physique.

4.4.1.3 State measures methods

Participants were asked to respond to each of the six items on a 9 point likert scale, in the context of their current unit of activity. The stem preceding each item read 'During your current activity within physical education...'. The six items reflected dissatisfaction/satisfaction with overall physical appearance, dissatisfaction/satisfaction with body shape and size, dissatisfaction/satisfaction with weight, feelings of physical attractiveness/unattractiveness, feelings about ones looks relative to others and finally evaluation of appearance in relation to the average person. Three items were reverse scored and the questionnaire was summed and divided by six, with a score of 1 representing dissatisfaction, a score of 5 being neither satisfied nor dissatisfied and a score of 9 being satisfied.

The alpha coefficients associated with the Body Image State Scale were 0.77 and 0.67 at time point 1 and time point 2, respectively. Based upon Nunnally's (1978) criterion of .70 the value obtained at time point 1 is acceptable, however, the value obtained at time point 2 is below the criterion, therefore results should be interpreted with caution. The variations in the alpha coefficients could be attributed to the difference in the participants used at time point 1 and time point 2.

4.4.2 Self Determination Theory

4.4.2.1 Rationale for the use of motivation questionnaire

Motivation for physical education was measured using the Behavioural Regulation in Physical Education Questionnaire (BRPEQ- Aelterman *et al.*, 2012). This questionnaire was adapted by Aelterman *et al.*, (2012) from the Behavioural Regulation in Exercise Questionnaire (BREQ-II-Markland and Tobin, 2004) to assess autonomous motivation (identified and intrinsic),

controlled motivation (external or introjected) and amotivation towards physical education. BREQ-II was derived to measure regulation of exercise behaviour and the subsequent adaptations into BRPEQ allowed for a context specific form of assessment. In the adaption of the scale, Aelterman *et al.*, (2012) removed references to exercising from the items and added an additional six items, including items which measured avoidance-orientated and identified regulation. Following a pilot study, the twenty five items underwent exploratory factor analysis, with twenty items retained which reflected the five motivational subscales. The questionnaire has satisfactory internal consistency (Aelterman *et al.*, 2012).

4.4.2.2 Motivation methods

Participants were required to complete the BREPQ in order to assess motivation to put effort into Physical Education. Participants responded to each of the twenty items on a five point Likert Scale, ranging from 1 (not true for me) to 5 (very true for me). All items started with 'I put effort into physical education...' followed by items which reflected the self determination theory categories. Items were summed into autonomous, controlled and amotivation.

The alpha coefficients associated with the BREPQ at time point 1 were 0.86, 0.82 and 0.83 for autonomous motivation, controlled motivation and amotivation, respectively. At time point 1 the alpha coefficients were 0.90, 0.88 and 0.85 for autonomous motivation, controlled motivation and amotivation, respectively. Based upon Nunnally's (1978) criterion of .70 all values obtained were deemed acceptable.

4.4.3 Perceptions of Competence

4.4.3.1 Rationale for Perceptions of Competence Subscale

The perceived competence subscale of the Intrinsic Motivation Inventory (McAuley, Duncan and Tammen, 1989) was used to assess adolescent's perceptions of competence within Physical Education. McAuley *et al.*, (1989) reported a Cronbach's alpha of 0.84 associated with the perceived competence subscale.

4.4.3.2 Methods for assessing perceptions of competence

Participants were asked to respond to each item on a 7-point Likert scale, ranging from 1(not true for me) to 7 (very true for me). Following the completion the questionnaires were scored. Item 3 was reversed scored and values of perceived competence were created for analysis. In the current study alpha coefficients of 0.83 and 0.84 were identified for time point 1 and time point 2, respectively, thus, based upon Nunnally's (1978) criterion of .70 all values obtained were deemed acceptable.

4.4.4 Transfer of Learning

Participants were asked to respond to the question ‘physical education classes stimulate me to also engage in sport activities outside of school’ on a 5 point likertscale ranging from 0 (not true for me) to 4 (totally true for me).

4.4.5 Lesson Content

Participants were asked to record their current unit of activity when responding to the questionnaire package. For the purposes of analysis lesson content was then grouped into two categories with ball games and racket sports into one category and artistic and fitness activities into a comparison category. At time point two 8 classes engaged in a unit of leadership activities, thus at this time point a third category of leadership was established. The explicit breakdown of the lesson contents for each class was presented in section 4.2.2, tables 1 and 2. The breakdown of these lesson contents into their respective categories for time point 1 and time point 2 can be found below in table 3.

Table 3: A table to highlight the breakdown of lesson contents into coding categories at time point 1 (T1) and time point 2 (T2)

	All	Boys	Girls	Mixed
Ball Games and Racket Sports T1	29	13	15	1
Artistic and Fitness T1	8	5	1	0
Ball Games and Racket Sports T2	9	5	4	0
Artistic and Fitness T2	21	9	12	0
Leadership T2	8	4	2	2

4.4.6 Anthropometric Measures

4.3.6.1 Height

Using standard anthropometric techniques height was measured without shoes to the nearest 0.5cm with a portable stadiometer.

4.4.6.2 Body Mass

Body mass was measured to the nearest 0.1kg with portable scales. Participants were dressed in light clothing and without shoes during the measurement.

4.4.6.3 Body Mass Index

Body Mass Index was measured in order to assess the perceptual component of trait body image disturbance (BMI-based Silhouette Matching Test). Body Mass Index of the adolescents was determined by $\text{body mass} / \text{height}^2$.

4.4.6.4 Body Composition

Body fat levels were measured using Tanita scales to assess Bioelectrical impedance. Participants stood barefoot and held hand grips. BIA in youth has been shown to produce comparable fat levels to those determined by dual-energy x-ray absorptiometry (Nunez *et al.*, 1999).

4.4.7 Demographic variables

The questionnaire package consisted of questions which assessed demographic characteristics (age, gender, socio-economic status and ethnicity). Individual socioeconomic status was determined by using the 2007 Indices of Multiple Deprivation (IMD) established from each participant's postcode, as used in previous studies (Fairclough *et al.*, 2009). The IMD score reflects seven domains of deprivation (Department of Communities and Local Government, 2007). Each participant's postcode was uploaded onto the application GeoConvert (MIMAS, 2012). This application locates IMD scores using the National Statistics Directory database. The postcodes were then ranked and categorised at most and least deprived.

4.4.8 Focus groups

4.4.8.1 Rationale for Focus Groups

Focus groups have been identified as an approach that compliments other data collection strategies and thus was selected to be utilised as such (Johnson and Christensen, 2012). Focus groups allow researchers to gather information via listening to participants, with the hope of obtaining a greater understanding of individuals and/or groups of individuals' thoughts and feelings towards a particular issue. Focus groups have been defined as "a carefully planned series of discussions designed to obtain perceptions on a desired area of interest in a permissive non threatening environment" (Krueger and Casey, 2000: 5). Focus groups rely upon the interaction of participants in the generation of data. According to Krueger and Casey (2000) "group members influence each other by responding to ideas and comments of others" (Krueger and Casey, 2000: 5).

4.4.8.2 Focus Group Methods

The focus groups were planned to consist of six groups of three participants, however, at some session the students that were scheduled to attend did not arrive, thus, some groups consisted of two pupils. Each group of participants were drawn from the same physical education class at one of the schools which undertook the quantitative fieldwork process. The sampling strategy used was taken into careful consideration given that group composition influences dynamics of the focus group and subsequent outcome. The groups were divided into single sex groups. This was done for a number of reasons; firstly this reflected the nature of their physical education classes. Secondly, we anticipated that there may be differences in the responses of males and females, due to the abundance of literature which suggests gender differences in this area. Participants were selected by a criterion sampling approach, selecting a range of low, mixed and high ability students for each focus group session. This was done with the help of their physical education teacher and their last assessment grades. This selection of heterogeneity with respect to ability was done so to try and represent a range of opinions across ability groups. Furthermore, in terms of sampling, it was requested to the teacher at the school that the students are of the same friendship groups. The literature

presents no consensus to the use of friendship groups, with some authors advocating a friendship based approach (Lewis, 1992) and others suggesting the use of strangers (Cohen *et al.*, 2000). However, as the members of the focus groups were by not definition ‘strangers’ as they engaged in the same physical education lessons, it was deemed that a friendship group approach was most appropriate due to the sensitive nature of the topic. I anticipated that this would allow the participants to speak more freely within the group. Furthermore, the relatively small groups sizes of three participants was selected based upon the basis of small friendship groups. Moreover, it has been advised that when addressing sensitive subjects in focus group sessions smaller focus group sessions are more appropriate (Morgan, 1996). After consultation with the contact person at the school, it was advised that the groups should also be divided into different ethnic groups. The advice from the teacher was that firstly this would be likely to represent friendship groups and secondly that cultural differences may have prevented barriers to free flowing, comfortable conversation. Thus, the decision was taken to divide focus groups in this manner; based upon the knowledge of the teacher and his pupils and also literature which suggests that homogeneous groups are more likely to promote discussion, (Johnson and Christensen, 2012).

The underlying aim of the focus group sessions was to explore how the participants felt about their bodies within physical education lessons and if there were any factors that they felt may enhance concerns regarding their physical appearance during physical education. Prior to engaging in the focus group sessions a set of questions were constructed to guide the sessions. The discussion was opened by some introductory questions regarding the participant’s experiences of physical education and then moved onto address issues relating to body image concerns within the context. During these sessions I acted as the moderator and although I tried to stay to the structure of the questions that I had previously derived I also felt it important for students to be able to digress into areas that they wanted to talk about.

The interviews were transcribed and coded into themes after being read several times in order to identify any emerging patterns. Further information on the themes that arose through the interviews can be identified in chapter 6 of this thesis.

4.5 Reflexive Methodological Limitations

This section will seek to acknowledge a number of methodological limitations. These limitations arose as a result of uncontrollable factors that were typically associated with issues around compliance with the schools. This limitations section is being positioned within this section of the thesis as it will provide the reader with an understanding of the intended methodologies and the methodologies that were executed. More specific limitations will be further explored within each data chapter. The focus of this section will be the limitations of the study, thus, factors that were beyond my control. The data chapters section will touch upon these factors but specifically focus upon the delimitations of the study, or in other words, the planned boundaries of the study.

Firstly this section will address the study limitations in relation to lesson content. The methodology was outlined in section 4.2 of the thesis. In the planning stages of the thesis it was anticipated that there would be an element of selection allowed in the types of units measured. It was anticipated that an equal proportion of lesson contents in relation to the two categories outlined in section 4.3.5 and sex would be determined. An equal proportion of categories would have been the ideal design for the study statistically, however, it emerged during the start of the fieldwork process that this selection of units would not be possible. Schools were very reluctant to engage in this type of process as it would have meant more contact time with the schools. Thus, as a compromise schools were more accommodating and receptive of a 'blanket' style approach, by this I mean targeting all pupils at one point in time, regardless of the types of activities they were engaged in. This meant that an equal distribution of categories by sex was not achieved. However, for the participating schools this was identified as a benefit for them. My impressions were that this approach was perceived as less disruptive for the classes and I had a perceived notion that it was a case of 'get it over and

done with'. This also meant that there was a more diverse range of activities than initially anticipated within each category. This may have implications when it comes to drawing conclusions on how activity type relates to body image and a more homogeneous group of activities may have meant that we could conclude more specifically about what types of activities within the defined categories related to situational body image disturbance.

The second unanticipated set of limitations arose in respect to the collection of anthropometric variables. In the initial planning stages it was hoped that anthropometric data could be obtained on all participants or at least a sample of participants from each class. It became apparent very quickly that this was over optimistic. In retrospect it may be appropriate to conclude that such measures may have majorly influenced the initial recruitment of schools and was one of the major barriers in the fieldwork process of the participating schools. Although this was presented to the schools as a flexible methodology i.e. the measures would be taken at the convenience of the school, it was met with negative responses from the staff. One of the schools refused to participate in anthropometric measures altogether and two of the schools permitted access to some of the physical education classes. Only one of the schools allowed access to all present pupils within all physical education classes. It was felt that the study would have benefited from a larger number of anthropometric data obtained. This would have allowed for use of perceptual distortion measures alongside the attitudinal measures. It was proposed that this approach would further current research and fill gaps in the literature that have focused purely on attitudinal components of the body image construct. Moreover, anthropometric measures could have been entered as a covariant in the main statistical analysis that was concerned with measures of body image.

In the planning stages of this thesis it was anticipated that objective measures of physical activity, via accelerometers would be obtained for a sample of pupils from each classes. It was felt that this would fill voids in the current literature, by providing a comparable measure of transfer of learning, as identified in the preceding literature review. However, as with the other limitations presented,

issues with compliance from the schools meant that they were not willing to allow access to pupils for this measure and as such should be noted as an unplanned limitation of the study.

This section has provided a reflection of issues that arose during the fieldwork process which meant that all of the anticipated measures or approaches considered in the initial design stages of this thesis were not completed due to issues beyond my control. As a result, some of the research questions presented in chapter 3 were slightly adapted to accommodate these issues. The following five chapters present the data obtained in the fieldwork process and will address some of the delimitations of the research.

Chapter 5: The Descriptive Characteristics of Trait Perceptual and Attitudinal Body Image Disturbance in Year 9 Boys and Girls

5. 1 Introduction

The aim of this chapter is to explore the characteristics of year 9 boys and girls perceptual and attitudinal trait body image disturbance and address research question 1, 'What are the characteristics of attitudinal and perceptual body image disturbance in year 9 boys and girls?'. This chapter will provide an insight into the specific nature of body image disturbance in the study population used throughout this thesis. Due to the comparatively low numbers of participants that participated in anthropometric data collection and thus, low values of perceptual distortion outcomes it was decided that these variables be excluded from any subsequent analysis, due to reductions in overall participant numbers and statistical power. However, the data obtained from the BMI-SMT will serve to descriptively explore the nature of body image disturbance in the sample population.

As identified in section 2.3.3 body image is a concern for both males and females, however, there is a tendency for research to focus on issues of body image disturbance in adolescent female populations. It is suggested that body satisfaction is an integral component of adolescent girls self esteem, thus, suggesting a heightened prevalence in this population during this developmental phase (Levine & Smolak, 2002a, p. 77). Section 2.3.3 also highlighted an emerging body of research that focuses upon body image disturbance in adolescent males and also proposed research which suggested that the processes of body dissatisfaction may differ between boys and girls. Section 2.4.1 also provides research support for the notion that body satisfaction may differ as a result of cultural differences associated with physical attractiveness between ethnic groups (Franko and Streigel, 2002; Neumark-Sztainer *et al.*, 2002; Jones, Fries and Danish, 2007) and also as a result of differences in social class, as demonstrated through socioeconomic status (Wardle and Marshland, 1990; Paxton *et al.*, 1994; Walters and Kendler, 1995)

This chapter will thus provide an exploration of levels of perceptual and attitudinal trait body image disturbance, by sex, ethnicity and socioeconomic status. Consequently, allowing a greater understanding of the nature of body image disturbance in the sample.

5.2 Methods

5.2.1 Participants and Procedures

Participants utilised in analysis for this chapter were participants at time point one and time point two. More information on these samples can be found in section 4.2. As outlined in chapter 4.2 participants were 620 pupils (53.2% males, 46.4% females) that completed at least one aspect of the questionnaire package at time point one. Participants at time point 1 were drawn from 37 physical education classes. At time point two participants were 461 pupils (55.3% male, 44.7% female) drawn from 38 physical education classes. Participants were asked to complete the questionnaire packages outlined in the methodology section of this thesis.

5.2.2 Measures

Anthropometric Measures

Height, body mass and body mass index was obtained from the participants using the methods detailed in chapter 4.3.6

Trait body Image

Trait body image was assessed in the participants by the methods outlined in chapter 4.3.2.1

Demographic Information

Demographic information was obtained from the participants, as outlined in chapter 4.3.7

5.2.3 Statistical Analysis

Given the nested structure of the data with 620 students nested within 37 physical education classes and the adequate sample size for conducting multilevel analysis, multilevel regression analysis was employed using MLWiN version 2.26. The data was treated as a two level model consisting of students at the first level and classes at the second level. An intercept only model was used to evaluate how much of the variance in body image state scores within physical education can be attributed to both levels. Data was not available for all participants on all measures however the MLWiN software automatically takes into consideration missing data. Sex was added as a covariant in all analysis.

5.3 Results

Boys had significantly higher levels of perceptual distortion compared to girls, $\chi^2(1) = 10.595, p < 0.01$. In relation to perceptual distortion 84.1% of pupils (87.1% boys, 83.9% girls) perceived their own BMI to be larger than their actual BMI. The percentage of children underestimating their BMI was 7.6% (5.8% boys, 9.7% girls). Accurate identification of their own BMI was achieved by 8.3% (7.1% boys and 6.4% girls) of the participants. The percentage of participants that identified their BMI within 2 BMI points in either direction was 23.5% (15.7% boys, 30.6% girls), this increased to 41.7% (28.6% boys, 56.5%) of participants that were able to identify their own BMI within 4 BMI values in either direction. Over half of the sample 56.1% (44.3% boys, 69.4% girls) were able to identify their current BMI within 5 BMI points. These values indicate the accuracy range to which participants were able to identify their own BMI.

Table 4 displays the non directional discrepancy scores for all of the participants and boys and girls individually. The table displays higher discrepancy scores between girls ideal and perceived current BMI compared to boys, thus suggesting lower levels of body satisfaction compared to boys, however, results were not significant at time point 1, $\chi^2 (1) = 2.305, p > 0.05$, or time point two, $\chi^2 (1) = 1.087, p > 0.05$. Table 5 displays the directional nature of body dissatisfaction in all participants and boys and girls individually. At both time points, boys had a slightly higher percentage of participants satisfied with their current physical appearance.

Table 4: Non directional discrepancy scores between current and ideal BMI, in all participants, boys and girls

	M (SD) All	M (SD) Boys	M (SD) Girls
BMI-SMT discrepancy between ideal and current (Time 1)	3.84 (3.60)	3.53 (3.50)	4.17 (3.69)
BMI-SMT discrepancy between ideal and current (Time 2)	3.99 (4.36)	3.80 (4.28)	4.22 (4.46)

Table 5: Levels of trait body satisfaction and direction of body image disturbance in boys and girls

	All	Boys	Girls
Percentage Desiring a larger BMI (Time 1/Time 2)	25.8%/18.7%	35.4%/25.8%	16.1%/9.9%
Percentage Desiring a smaller BMI (Time 1/Time 2)	55.7%/51.6%	44.1%/42.9%	68.1%/62.5%
Percentage satisfied with current BMI (Time 1/Time 2)	18.5%/24.6%	20.5%/25%	15.8%/24%

Perceptual body image disturbance did not differ significantly between white participants and black and ethnic minority participants, $\chi^2 (1) = 2.901, p > 0.05$. In addition, no significant differences were identified between the two groups in relation to trait body dissatisfaction and time point 1, $\chi^2 (1) = 0.020, p > 0.05$, or time point 2, $\chi^2 (1) = 1.905, p > 0.05$.

Furthermore, no significant differences in terms of perceptual distortion were identified between participants classified as most deprived and least deprived, $\chi^2 (1) = 1.369, p > 0.05$. Moreover, no significant differences were identified between pupils classified as most deprived and least deprived with respect to trait levels of satisfaction at time point one, $\chi^2 (1) = 1.140, p > 0.05$ or time point two, $\chi^2 (1) = 0.982, p > 0.05$.

5.4 Discussion

The aim of this chapter was to provide descriptive information on the nature of body image disturbance in the sample of participants that will be used throughout the thesis.

Body Satisfaction

From descriptively exploring the values obtained from the BMI-SMT, results suggest that at both time point one and time point two, girls had slightly higher discrepancies between current and ideal BMI values and a higher percentage of boys experienced no discrepancy between their current and ideal BMI, however this is not statistically significant. This suggests that levels of body dissatisfaction in boys and girls may be of a comparable level. This is in accordance with the argument put forth by McCabe and Ricciardelli (2004b), which suggests levels of body image disturbance are similar between boys and girls as discussed in chapter 2. However, it opposes the conclusions of a review of boys' body image by Cohane and Pope (2001) which concluded that body satisfaction levels are higher in boys compared to girls.

In terms of the direction of body dissatisfaction more boys than girls desired a larger BMI and more girls than boys desired a smaller BMI. However, for both boys and girls, the predominant direction of body dissatisfaction was a desire for a smaller BMI. Data from the current study is in agreement with previous research that suggests that the processes underlying body dissatisfaction differ between males and females, with the processes of body dissatisfaction predominantly characterised by a desire to be thinner in females and a combined process of a desire for a smaller body size in some males and a desire for a larger body size in other males (McCabe and Ricciardelli, 2004b; Cohane and Pope, 2001).

The prevalence of body dissatisfaction in females in the current study is comparable with estimates put forth by Levine and Smolak (2002). The authors suggest that approximately 50-80% of adolescent girls have a desire for a thinner body; this can be paralleled with the values of 62-68% in the current study. The overall dissatisfaction levels of 71%-80% can be compared also with values

reported by Cohane and Pope (2001). Additionally, the results confirm the notion put forward by McCabe and Ricciardelli (2004b) that outcomes in respect to body dissatisfaction are similar between boys and girls when the two processes of body dissatisfaction are combined. However, previous research has suggested that the processes of a desire for a smaller and a larger body size are of approximate equal proportions (Furnham and Calman, 1998; Ricciardelli and McCabe, 2003). The current study suggests that more boys in the current study had a desire for increased body size with around 10-20% more boys desiring a smaller BMI than a larger BMI.

Perceptual Distortion

In terms of perceptual distortion the majority of both boys and girls overestimated their current BMI. These results are in accordance with Peterson *et al.*, (2003), that identified both boys and girls perceived current BMI was significantly higher than their self reported BMI. A slightly higher percentage of boys compared to girls suffered no perceptual distortion, however almost double the amount of girls compared to boys were able to accurately estimate their own BMI within two BMI points either side of their actual BMI, suggesting that girls were more accurately able to depict their current BMI and thus suffered less perceptual body image disturbance. This measure of perceptual distortion has not been widely used in research and as such there are no directly comparable results.

The method of the BMI-based silhouette matching test was selected for the current study as a review of figural drawing scales identified that it was the only figural rating scale available that was able to identify perceptual distortion in this population (Gardner and Brown, 2010). The authors advised that perceptual distortion should be measured in studies, where feasible. However, there are few studies that have utilised this measure and as such there are no directly comparable results. By definition the method used assesses body distortion by determining the accuracy of body size estimation in relation to actual body size.

Limitations and Future Directions

The current study had a number of limitations, firstly, the measure of body satisfaction failed to distinguish between muscle and fatness, with muscle being identified as a key component of body dissatisfaction in males (Cohane and Pope, 2001). Additionally, the measure of perceptual body image relied upon the adolescents being able to accurately identify BMI values from the silhouettes. It may be that adolescent girls have a greater level of awareness regarding body size and thus were able to identify more accurately the size of their body. Perceptual distortion, as assessed in the current study may mean that boys just have a decreased sense of awareness regarding the size of their bodies. The enhanced 'perceptual distortion' in males, thus may not necessarily be viewed in a negative sense. Females may be more inclined to evaluate their physique and engage more frequently in personal assessments, associated with their increased levels of body dissatisfaction and thus are more accurately able to identify the size of their bodies. Thus, this method of perceptual body image disturbance may not have relevance for non clinical populations. More sophisticated measurement techniques may be required in order to better understand how differences in perceptual distortion in a non clinical population of adolescents.

5. 5 Conclusion

Results of this chapter reaffirm the need for body image not to be addressed solely as a female issue and a need for future research to explore both the prevalence and processes underlying body satisfaction in both boys and girls. Subsequent chapters will address the situational body image satisfaction of boys and girls in physical education and should be used as a reference point for further exploration of sex differences in body satisfaction.

This chapter provides an overview into the prevalence and nature of trait body image disturbance in the study population. Interestingly, results suggests that boys have significantly higher levels of perceptual distortion, however, more sophisticated methods would be required to explore this statement further. The results suggest that body satisfaction does not significantly differ between males and females; however, the processes underlying dissatisfaction are different. The differences that are highlighted in the examination of trait body image disturbance will provide greater insight into the nature of dissatisfaction when assessed through situational specific measure of satisfaction in subsequent chapters by a measure which does not have the potential to identify the specific qualities of dissatisfaction.

Chapter 6: The Distribution of Body Image Satisfaction within Year 9 Physical Education and Relationships with Physical Education Lesson Content.

6.1 Introduction

This chapter will seek to address research question 2, are there between pupil and between class differences in the body satisfaction scores of 13-14 year old pupils within physical education? And research question 3, does physical education content relate to body satisfaction within physical education? Thus, the collective aim of this chapter is to explore the stability of body satisfaction within physical education. This will be done by investigating how stable body image is across time points. This will be done by exploring how much of the variance in body image is situated at the between time point level. In addition, we will also explore how much of the variance in body satisfaction scores can be attributed to between-class differences, thus providing an insight into the extent to which the class context influences feelings about the body. Secondly this chapter will explore much of the variance in scores between physical education classes can be attributed to differences in lesson content, by adding this variable as a predictor into the model. This chapter will also present the qualitative data from the focus groups sessions, which seek to act as a method of triangulation for both of the research questions relevant to this section.

Section 2.3 highlighted the tendency for body image literature to focus upon trait aspects of body image, specifically in relation to the component of body satisfaction. The chapter argued that although this approach to the study of the construct provides an interesting and useful perspective on gaining a greater understanding of body image, it only provides an insight at one level. As previously discussed in chapter 2 body image is an unstable phenomenon, sensitive to influence from proximal events and processes,(Tiggemann, 2001; Farrell, Lee, and Shafran, 2005; Legenbauer, Rühl and Vocks, 2008). To overlook this characteristic of the construct would potentially eliminate how body image interacts on a day to day basis in real life contexts, thus adopting a state level approach aligns with an emerging body of literature addressing fluctuations within

different contexts (Amorose, 2001, Cash, 2002a, Cash, 2002b and Cash *et al.*, 2002; Melnyk, Cash, & Janda, 2004; Tiggemann, 2001).

Although recent literature has begun to address the transient nature of the construct, this relatively new approach has meant that many contexts have yet to be examined. Section 2.4 discussed how the physical education lesson is likely to present a number of stimuli proposed to influence information processing in relation to physical appearance. The presented factors such as physical education kit, changing rooms and physical activity within the lesson itself are variables that have the potential to influence this process. To support this notion, there is a body of qualitative literature which has highlighted how factors such as changing rooms (Ntoumanis *et al.*, 2004; O'Donovan & Kirk, 2007), physical education kit (Allender *et al.*, 2006; Velija and Kumar, 2009) and social scrutiny (Flintoff and Scratton, 2001) have all influenced young people's experience of physical education. However, the transient nature of body image appears to have been overlooked within the physical education literature.

Furthermore, the relationship between lesson content and state body image appears to have been overlooked. Yet, as argued in chapter 2 research from the state body image literature provides a plausible hypothesis supported by literature within sports psychology that has explored how engagement in different sporting activities can influence levels of body satisfaction (Swami *et al.*, 2009; De bruin, Oudejan and Baker., 2007; Davidson, Earnest and Birch 2002). Additionally, Burgess *et al.*, (2006) provide a rationale for the impact that short term engagement in certain activities can have upon body satisfaction in adolescent girls. This research further supports the proposition that short term engagement in different types of activities influence body satisfaction in different ways. However, Burgess *et al.*, (2006) note that there is little research conducted on non athletic populations, thus, justifying a need in this study to explore the relationships in normal adolescent populations. Additionally, exploring the relationship in both adolescent boys and girls will expand upon the tendency for literature to focus upon body image in adolescent female populations.

It is hypothesised that the majority of the variance in body satisfaction scores within physical education can be attributed to between pupil factors, such as factors that interact on a personal level, however, it is proposed due to the contextual specific nature of the construct that between class factor e.g. factors that operate at the class level such as teacher behaviour and lesson content will significantly contribute to the variation in body satisfaction scores. It is hypothesised that classes engaged in activities grouped as artistic and fitness would have significantly lower body image states scale scores than those in racket and ball games activities. This is based upon the rationale that artistic and fitness activities have links between successful performance and either appearance or a lean physique (Ferrand, Magnan and Philippe, 2005).

6.2 Methods

6.2.1 Participants and Procedures

For this chapter, data was utilised from both time point one and time point two data collection points. Participants included in the data analysis for this chapter were only participants that completed both time one and time two measures. Further information on the characteristics of the sample can be found in section 4.2. The pupils used for analysis in this chapter consisted of 208 pupils (51.9% males, 48.1% females). These were pupils that attempted at least one aspect of the questionnaire package at time point 1 and time point 2, however, six of these pupils failed to complete the aspect of the questionnaire which addressed the dependent variable, thus the analysis was conducted with 202 pupils. These pupils were from 23 physical education classes from 3 of the participating schools. At one school the composition of the classes changed between time point one and time point two and thus were excluded from analysis in this chapter (see section 4.2 for more information). According to information available from each schools most recent Ofsted report, of the remaining three schools two are classified as low socioeconomic status and one school as high socioeconomic status. The number of consenting pupils per class that were measured at both time points ranged from 2-21, with an average of approximately 9 consenting pupils per class measured at

both time points. The breakdown of lesson contents across time points can be highlighted in table 6.

Table 6: A table to highlight the breakdown of lesson contents across time points

	All	Boys	Girls
Ball Games and Racket (T1) Followed by Fitness and Artistic (T2)	12	5	7
Fitness and Artistic (T1) Followed by Ball Games and Racket (T2)	1	1	0
Ball Games and Racket (T1 and T2)	3	1	2
Fitness and Artistic (T1 and T2)	7	4	3
Total Classes	23	11	12

Participants were asked to respond to a questionnaire during two units of physical education, responding to the items in the context of their current unit of activity. Questionnaires were completed during a physical education unit and the lesson content for the individual class was recorded.

6.2.2 Measures

State Body Image

State specific body image within physical education was measured using the procedures outlined in chapter 4.3.1.3.

Lesson Content

Lesson content was reported by the students and both time point one and time point two. At time point one the activities were coded into two categories, with fitness and artistic activities in one category and ball games and racket sports in a comparison category. Table 6 highlights the breakdown of lesson contents across time points.

Focus Groups

Focus groups were conducted as outlined in chapter 4.3

6.2.3 Statistical Analysis

Given the nested structure of the data with 202 participants nested within 24 physical education classes at both combined time points multilevel regression analysis was employed using MLWiN version 2.26. For this analysis the time points were combined to form 404 participants across 48 physical education classes. A three level model yielded a better fit than a two level model ($\chi^2(1) = 16.88$, $p < 0.001$), therefore, the data was treated as a three level model consisting of time at the first level, pupils at the second level and classes at the third level. An intercept only model was used to evaluate how much of the variance in body image state scores within physical education can be attributed to all levels. Data on student's body image scores were not available for all participants; however the MLWiN software automatically takes into consideration missing data, thus, the analysis was conducted with 404 of 416 pupils students, when the dependant variable was body image within physical education.

6.3 Results

The alpha coefficient of .69 for the Body Image States Scale for both time points combined at time point one is deemed below the acceptable criterion defined by Nunnally (1978), therefore results should be interpreted with caution.

Results of multilevel analysis for time point one revealed an intercept of 5.21 (S.E =0.12) which refers to the overall mean of body image state scores of all students across all time points and classes, suggesting that students are on average neither satisfied nor dissatisfied with their bodies in physical education.

Between time point differences accounted for 44.8% of the variance in body image state scale scores, within physical education. Remark: the high variance at the time level suggests that there is stability across time points, because two measures of the same pupil are likely to be alike, at the same time there is also large between pupil level variance, which illustrates that pupil level variables are influencing variance across time points, and class level factors are influencing variance across pupils and time points. Between pupil differences accounted for 42.8% of the variances in body image state scale scores within physical education. The further, 12.4% of variance can be attributed to differences between classes, $\chi^2(1) = 4.092, p < 0.05$.

Lesson content was added into the null model whilst controlling for sex and time (see table 7). Results revealed that whilst controlling for sex and time, lesson content did not significantly predict variations in body image state scale scores $\chi^2(1) = 1.17, p > 0.05$. This means that across time points there were no significant differences in body image scores when comparing artistic sports with ball game. This can be further exemplified by the mean (S.E) body image state scale scores for all pupils and boys and girls individually as displayed in table 8.

In order to explore the stability of body satisfaction within physical education, time was entered into the null model. Results indicated that time did not significantly predict variations in body image state scale scores $\chi^2(1) = 2.65, p > 0.05$. Furthermore, there were no significant interaction-effects between time and lesson content $\chi^2(1) = 0.01, p > 0.05$ (see table 7, model 2).

Table 7: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to lesson content, whilst controlling for time and sex.

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	5.21 (0.12)	5.7 (0.14)	5.69 (0.15)
Lesson content (ref cat Ball and Racket)		0.13(0.12)	0.14 (0.16)
Sex (ref cat male)		-0.81 (0.18)***	-0.81 (0.18)***
Time (ref cat T1)		-0.2(0.1)	0.18 (0.19)
Time*Content Interaction (ref cat T1 and ball games and racket sports)			-0.03 (0.26)
Random Part			
Class level variance	0.21(0.1)*	0.05(0.05)	0.05 (0.05)
Pupil level variance	0.71 (0.12)***	0.71(0.12)* **	0.71 (0.12)***
Time level variance	0.75 (0.08)***	0.74 (0.08)***	0.74 (0.08)***
Deviance Test Model	1268.413	1250.456	1250.445

Table 8: Means of Body Image State Scale Scores as a function of lesson content and sex

Lesson Content	Mean (SE)
Ball games and racket sports (all)	5.21 (0.14)
Artistic and Fitness (all)	5.21(0.13)
Ball games and racket sports (Boys)	5.67 (0.14)
Ball games and racket sports (Girls)	4.86 (0.14)
Artistic and fitness (Boys)	5.68 (0.14)
Artistic and fitness (Girls)	4.87(0.13)

Note: A higher score is a higher level of body satisfaction

6.4 Discussion

The purpose of this chapter was to explore relationships between physical education lesson content and state body satisfaction. Results revealed that the majority of variance in body image state scale scores are not situated at the class level this, therefore, suggests that variance in body satisfaction scores can be attributed to factors operating at this intrapersonal level or at the time level. However, results also revealed that a significant amount of variance in body satisfaction scores can be attributed to between class differences. There was no significant relationship between body satisfaction scores within physical education and lesson content in the current study, with body satisfaction scores remaining stable across lesson contents for both boys and girls.

Between Pupil and Between Class Variance in Body Image States

In agreement with the hypothesis between-class differences contributed to significant variations in body image state scale scores, thus suggesting there are factors operating at the class level to explain variations between physical education classes. Results suggest that although the minority of the variance was situated at this level, there may be factors operating within the physical education classroom which may contribute to the understanding of the 12.4% identified at this level. Furthermore it must be acknowledged that class and pupil level variance may interact and thus class level variance may manifest itself through the pupil level. For instance, when a teacher interacts differently with different pupils in the classroom, or when personal characteristics of the pupils are influencing the way the teacher is interacting with particular pupils in the classroom. Results are consistent with the cognitive behaviour model of body image proposed by Cash (2002). The model proposes that body image disturbance is a combination of both proximal and historical factors. Historical factors relate to variables such as cultural socialisation, physical characteristics, personality attributes and interpersonal experiences, which are more likely to represent differences associated with pupil level variance. Proximal events incorporate activating events and are therefore more likely to represent between class variance and also time level variance. There is a distinct lack of literature within this area relating to potential activating events of state body image disturbances between physical education classes, however Cash's (2002) proposition of precipitating events likely to stimulate information processing in relation to physical appearance appear to have coherence with the physical education environment and may explain the observed between class differences.

In this study, lesson content was assessed as one of the factors that could potentially contribute to between class differences in body satisfaction scores, however, variations between classes could potentially be attributed to a number of factors relating to teaching style, teacher characteristics, environmental factors and interpersonal relationships that were not assessed in the study but could be used in future research to explain between class variations.

Relationships between Body Image States and Lesson Content

Results of the current study conclusively suggest that lesson content does not contribute to variations in body satisfaction scores within physical education. Contrary to expectations, levels of body satisfaction remained stable across different lesson contents and dissatisfaction was not highest in fitness and artistic categories as hypothesised. This is inconsistent with studies that have shown higher levels of dissatisfaction to be associated with engagement in lean activities or activities in which a lean physique is often related to successful outcomes (Bryne and McLean, 2001; Muscat and Long, 2008). However, the majority of research that has investigated the impact of sport type upon body image, after a period of long term engagement in high level athletes (Crissey and Honea, 2006) and in individuals that have actively chosen to participate in that activity. It may be that after a period of prolonged engagement, the internalisation of socio-cultural ideals in relation to lean sports may be more imbedded and that the same hypothesised mechanisms do not operate upon acute exposure. Thus, acute exposure may not have the same mechanisms in relation to the link between identity and sport type. For example, body dissatisfaction may be more pronounced over time when an individual associates engagement in an activity as a fundamental part of their identity. In addition to these potential explanations it could be proposed that there is an increased awareness regarding the links between aesthetic and lean sports and body dissatisfaction and as a consequence there is a growing level of acceptance for body diversity within such activities. Overall, the results suggest that lesson content within physical education is not influencing an individual's situational experience of their body. This in contrast to the findings of Burgess *et al.*, (2006) whom suggested engagement in aerobic dance relates to significant decreases in body dissatisfaction compared to physical education swimming. Further research is warranted to explore if swimming may be the only environment in physical education that pupils are experiences state specific disturbances.

Focus Group Findings and Discussions

As outlined in the introduction of this chapter, focus group sessions were used as a means of triangulation for the research questions posed in this chapter. Pupils were asked a number of questions regarding the experience of their bodies within physical education. Through the analysis of the transcripts a number of themes arose, with some not directly relating to the research questions posed in this chapter but do present some interesting findings that act to provide an additional perspective to how pupils experience their bodies within physical education.

Focus Groups: Lesson content

Through the focus group sessions other issues emerged that were not directly related to the research questions posed but highlighted certain issues regarding the body in physical education that can be paralleled with some of the literature presented in chapter 2. Although, the focus of the two research questions in this chapter are concerned with the body within the actual lesson itself, when pupils were directly asked regarding the experience of their body within the physical education lesson, most were reluctant to comment and when asked questions such as ‘do you think physical education lessons make you more conscious of your body’ or ‘does physical education ever make you feel uncomfortable about your body?’, most questions were met with a simple ‘No’. This was the same for all of the groups interviewed besides one group of girls that were participating in a fitness based unit. When asked the same question, they responded:

‘Yeah because we were doing things where we were talking about calories and we had to pick a snack and then work off the calories, it makes you think about what you have eaten. It makes you look at how many calories are in stuff, just in case.’ (Louise, focus group 6)

‘I know yeah after I was checking my food like ‘how many calories has this got’ (Shanna, focus group 6)

All of the other participants were reluctant to discuss the issue, apart from this group of girls that directly related their body image within physical education to

the fitness unit they were currently undertaking. This presents a number of questions, firstly this could have merely been the interpretation of this group of girls and their possible socially constructed ideas between body consciousness and calorie consumption. Secondly, the other participants were very reluctant to even explore the issue and I felt a sense of being ‘closed off’ when the question was asked. The blunt responses left me with a very narrow direction to take further questioning as their reluctance to speak of these issues was evident. This brings into question the methods used in this approach, with what can be seen as such a highly sensitive subject a greater period of familiarisation with the pupils may have been appropriate, in order to establish a certain level of trust. For example Oliver (2001), conducted focus groups with adolescent girls on the topic of the body within physical education and spent an hour a week interacting with the participants for one year. This extended period of contact between the researcher and the participants may have led to the establishment of rapport and trust, something which may have been lacking in the current approach.

Focus Groups: Changing Rooms

A major theme that arose during the focus group sessions was the issues relating to the changing rooms. Although this cannot directly be related to the research questions it does provide an interesting perspective, suggesting that negotiating their bodies into the physical education was much more problematic to the pupils than negotiating their bodies within the actual lesson itself. All of the focus group session spoke in some regard about the changing room environment and strategies used to limit body exposure within this environment. When asked what they thought about the changing rooms, opinions were consistently expressed regarding the need for more privacy, as exemplified below in the dialogue exchanged between the female pupils in focus group 4:

‘And we need more like, you know some people don’t like to change in front of other people and like that we need like more...’ (Ashanti, focus group 4)

‘Privacy’ (Aneesha, focus group 4)

‘Yeah’ (Taylor, focus group 4)

‘Cubicles, with curtains’ (Ashanti, focus group 4)

This was not a theme isolated to just the groups of females, males also discussed similar issues, as exemplified in the dialogue exchanged between male pupils in focus group 1:

‘You get to the toilets or the changing rooms’ (Josh, focus group 1)

‘You have to wait at a door right and as soon as that door opens, peg it in to the changing rooms and there are about 30 kids in there, yet 10 cubicles. It’s ridiculous.’ (Charlie, focus group 1)

‘Some people even share.’ (Callum, focus group 1)

Similar to the group of girls, the boys also reported the same issues surrounding privacy and the need to limit the exposure of their bodies. However, unique to the male groups was the notion of hyper masculinity within the changing room, as exemplified in the exchange below, when asked what the changing room environment was like:

‘Oh, it’s just a laugh.’ (Charlie, focus group 1)

‘Hostile!’ (Josh, focus group 1)

‘Take your shirt off...’ (Charlie, focus group 1)

‘It’s dangerous’ (Josh, focus group 1)

‘Take your shirt off, it’s like...’ (Charlie, focus group 1)

‘Don’t leave your clothes in the showers’ (Josh, focus group 1)

‘Don’t leave your clothes in the showers and you take your shirt off and get a massive hand mark on your back’ (Charlie, focus group 1)

‘I did it for the first two lessons and I was like yeah I’m not going to do this again. You get bacon slapped if you don’t get a cubicle. There are

some kids that don't bother with cubicles because if anyone bacon slaps them they will bacon slap them harder.' (Josh, focus group 1)

The findings identified in the current study surrounding the importance of the changing rooms are in line with previous studies that have signified the crucial role the changing room environment may play in a pupil's experience of physical education (O'Donovan and Kirk, 2007), specifically being identified as a sight of negative experiences (Flintoff and Scraton, 2001).

In respect to the notions of hyper masculinity amongst boys in the changing rooms, the findings of this study are consistent with previous research. Acts of violence and aggression have been noted to occur within the changing room as a means of establishing dominance (Parker, 1996).

Focus Groups: Kit

Another issue identified within the literature as a factor that may influence how pupils felt about their bodies within physical education was kit, or the clothing worn within physical education. This did not emerge as strongly though the interviews as issues surrounding changing rooms, however, a number of pupils expressed their discontent with the lack of choice associated with their P.E kit, as exemplified in the transcript extracts below:

'You should be allowed to wear your own t-shirt and stuff' (Sarah, focus group 2)

'We should be allowed to wear our own joggers and stuff' (Charlie, focus group 1).

'If they give you a colour, like say you have got to wear grey, you should be able to pick your own grey ones' (Callum, focus group 1)

'It's just boring' (Laura, focus group 2)

However, the issues surrounding kit were not directly mentioned in relation to issues concerning the body, but more so in relation to a lack of choice. This was not the case, however, when one group of boys spoke about how at times girls in

their classes might make alterations to the kit, speaking about how they wear 'branded items' or 'stuff that can be worn into town but they think it's a PE top' or 'tucking them in'.

O'Donovan and Kirk (2007) termed the changing room environment, including aspects of kit as the 'classroom entry'. Through the examination of the focus group interviews conducted in this study it is apparent that pupils were more willing to engage in dialogue concerning classroom entry as oppose to issues within the lesson itself. It may be concluded that factors within the classroom entry stage were more problematic and thus pupils were able to speak more freely on these subjects. However, it could be argued that issues within the lesson are more implicit, as they are not explicitly related to the exposure of the body. This is in accordance with the proposed mechanisms associated with lesson content; thus the subconscious socio-cultural processes underpinning the proposed relationship constructions are not an active conscious action like those undertaken during classroom entry.

Limitations and Future Directions

Several limitations of the current study must be recognised. Firstly, data collection points were selected by the school, at a time of their convenience. This was after a period of trying to arrange questionnaires to be completed during selected activities. Logistically this did not prove feasible with the participating schools. Schools preferred a 'blanket' approach, by this I mean, targeting all pupils, across all classes, this meant that activities selected and that the activities that were assessed were done so in line with the 'natural' proportion of activities across the school year, thus, a predominantly ball-games based curriculum. Future research should seek to obtain a more equal distribution across activity categories and sex distribution within categories. Moreover, future research should also consider the way in which activities are grouped for comparison; having equal proportions of different types of fitness activities may overcome the inconsistencies of the current study. Additionally with regard to activity categories, the potential for sports leadership units to positively impact body satisfaction should be explored further, as at time point two when participating in these units pupils had the

highest levels of body satisfaction, although this wasn't significant the results suggest a need for further investigation.

Secondly, the influence of mood upon state body image was not taken into consideration in the current study. Research has shown the influence of mood upon body image (Taylor and Cooper, 1992) and thus future research studies should incorporate this measure. Additionally, more information on the context in which the classes are conducted would further the current study. For example, in relation to lesson content the environment in which the lesson is conducted may be an interacting factor. The area of the space in which the activity is conducted and the number of pupils in that area may be a significant factor to consider in future research, smaller areas may elicit more chances for social comparison if individuals are physically closer together. Furthermore, the influence of social contextual factors should be taken into consideration in future research. Factors such as peer relationships within physical education classes should be taken into consideration when exploring the experience of the body within physical education. To support this notion Cox *et al.*, (2011) suggests that peer acceptance is a correlate of social physique anxiety within physical education. Supportive in depth qualitative explorations of the dynamics of friendships groups within each of the classes could provide an insight into the extent that such variables contribute to between class differences in body image scores. Furthermore, future research should seek to investigate other factors, such as teacher and environment variables that have the potential to contribute to between class variance in body image scores within physical education.

6.5 Conclusion

The results of the current multi-methods study suggest that the process of classroom entry may be more significant in terms of issues surrounding body satisfaction than issues within the lesson itself. This initial insight contributes uniquely to a body of qualitative research which makes tentative links between factors within physical education and body experience, by making specific links between what young people experience in physical education and the impact upon satisfaction with their bodies. Furthermore the current study provides support to the state body image literature to the notion of body image as an unstable construct.

Chapter 7: Associations between Students' Body Satisfaction within Physical Education and Anthropometric and Demographic Variables

7.1 Introduction

This chapter addresses both research question 4 and research question 5, does students' body fat/BMI relate to body satisfaction within physical education? And does students' body satisfaction within physical education relate to sex, socioeconomic status and ethnicity? The previous chapter explored the extent to which variations in body satisfaction scores within physical education could be attributed to between class and between pupils factors and the extent to which lesson content explain variations in body satisfaction scores between classes. This chapter will seek to explore body satisfaction within physical education in relation to potential pupil level predictors.

Section 2.4 documented how differences in body image and body satisfaction can arise as a result of differences between populations. For example, an abundance of research was put forth in section 2.3.3, that suggests body image concerns are higher in girls than boys due to differences in the socio-cultural pressures associated with physical attractiveness between boys and girls (McCabe, Ricciardelli and Finemore, 2002; Smolak and Levine, 2001). Additionally, it was outlined that empirical research suggests that black individuals have higher body image and body esteem levels than other ethnic groups, due to a decreased association between leanness and physical attractiveness (Franko and Streigel, 2002; Neumark-Sztainer *et al.*, 2002; Jones, Fries and Danish, 2007). We should note that this is a relatively underexplored relationship in British populations. In the same respect, few studies have explored associations between body satisfaction and socioeconomic status. Research that has addressed the issue is inconclusive, but there is a suggestion that socioeconomic status can influence body concerns and practices associated with body regulation (Wardle and Marshland, 1990; Paxton *et al.*, 1994; Walters and Kendler, 1995). For example O'Dea and Caputi (2001) identified that middle/high socioeconomic status females were the most likely group to have low levels of physical self esteem and low socioeconomic status boys were more likely to report high levels of physical

self esteem. Moreover, similar findings were identified in a study of Australian adolescents, whereby high socioeconomic status participants were more likely to desire a slimmer body size than were low socioeconomic participants (Wang *et al.*, 2005)

It was also put forth in section 2.4, that the physicality of an individual in terms of body fat and BMI is likely to be a dominant predictor of body image concerns. This is based upon the rationale that individuals are less satisfied with their physical appearance when their bodies deviate from socio-cultural ideals of physical attractiveness.

It is hypothesised here that students with higher percent body fat and higher BMI were likely to report higher levels of body dissatisfaction within physical education. Secondly, it is hypothesised that body image disturbance within physical education would be higher in females compared to males. Thirdly, it was hypothesised that those that categorised themselves as ‘white British’ or ‘white other’ would have significantly higher levels of body dissatisfaction compared to all other ethnic groups. Finally, it was hypothesised that significant differences would exist between those who were categorised as most deprived and those that were categorised as least deprived, however, the inconclusive body of literature does not allow for the directional nature of the relationship to be predicted.

7.2 Methods

7.2.1 Participants and Procedures

Participants were the same participants as detailed in section 4.2 and consisted of 620 pupils (53.2% males, 46.8% females) from 37 single sex physical education classes (18 male, 18 female classes, 1 coeducational class) from four schools in the south east and east of England. The number of pupils completing the questionnaire package at time point 1 ranged from 3-28 pupils per class, with an average of approximately 17 pupils per class. The sample consisted of 65.8% white pupils, 19.4% Asian pupils, 8.2% mixed race pupils, 5.6% black pupils and an additional 0.9% pupils that classed themselves as ‘other’. The remaining 145 participants did not specify an ethnic group. Ethical approval and participant

recruitment was conducting as part of study one, thus the same approaches and techniques were used. From the 37 physical education classes, 16 classes took part in anthropometric assessments. The sample consisted of 159 pupils (51.6% male, 48.4% female). Due to issues associated with access to the pupils not all pupils in all 37 classes underwent anthropometric assessments, the number of pupils ranged from 1-23 within each class, with an average of 10 pupils within each of the 16 classes undergoing these measurements.

Participants were asked to respond to a questionnaire during a unit of physical education, responding to the items in the context of their current unit of activity. Questionnaires were completed during a physical education unit and the lesson content for the individual class was recorded.

7.2.2 Measures

State Body Image

State specific body image within physical education was measured the procedures outlined in chapter 4.3.1.1

Anthropometric Measures

Body mass, height and body mass index were obtained from the participants using the procedures outlined in chapter 4.3.6

Demographic variables

With respect to demographic information, participants were asked to report information related to socioeconomic status, ethnicity and sex in their questionnaire package. Participants were asked to report their individual home postcodes. Postcode data was achieved for 512 of the 738 participants, the remaining 226 participants did not provide postcodes. Individual socioeconomic status was determined by using the 2007 Indices of Multiple Deprivation (IDM) established from each participant's postcode, as used in previous studies (Fairclough *et al.*, 2009). The IMD score reflects seven domains of deprivation (Department of Communities and Local Government, 2007). Each participant's postcode was uploaded into the application GeoConvert (MIMAS, 2012). This

application locates IMD scores using the National Statistics Directory database. The postcodes were then ranked and categorised at most and least deprived.

Participants were also asked to report their ethnicity. Ethnicity information was obtained for 638 participants. For the purpose of statistical analysis, ethnicity was divided into two categories; with white British and white other in one category and black and ethnicity minorities in a comparison group. The sample consisted of 420 participants in the white British and white other category and 218 participants in the black and ethnic minority category. Participants were grouped into these two distinct categories in order to provide more even comparison group for statistical analysis. Although it is recognised in the literature that differences in body image satisfaction may differ across ethnic groups, upon examination of the descriptive statistics in the current study it was identified that body satisfaction scores were highest in Asian and Black ethnic groups. Although this provides contradictory evidence to literature in relation to body image and ethnicity it provides further justification for the grouping in the current study.

7.2.3 Statistical Analysis

Given the nested structure of the data with 738 students nested within 37 physical education classes and the adequate sample size for conducting multilevel analysis, multilevel regression analysis was employed using MLWiN version 2.26. The data was treated as a two level model consisting of students at the first level and classes at the second level. An intercept only model was used to evaluate how much of the variance in body image state scores within physical education can be attributed to both levels. Data was not available for all participants on all measures however the MLWiN software automatically takes into consideration missing data, thus, the analysis was conducted with a different number of participants for each relationship; 140 for BMI, 140 for body fat, 406 for socioeconomic status, 583 for ethnicity and 593 for sex.

7.3 Results

Firstly as noted in table 9 (see model 1) BMI significantly contributes to the variance in body image state scale scores between pupils ($\chi^2(1) = 62.7, p < 0.001$), but not between classes ($\chi^2(1) = 2.42, p > 0.05$). In order to see if body fat had a similar influence on body image state scale scores within physical education it was entered into the null model, see table 9 (model 2). In the same respect, percent body fat significantly contributes to variance in body image state scores between pupils ($\chi^2(1) = 62.65, p < 0.001$) but not between classes ($\chi^2(1) = 2.61, p > 0.05$). The random part of the model indicates that BMI and percent body fat accounted for 17% and 18% of the variance in body image state scale scores between pupils, respectively. Body fat provided a slightly better fit for the model with a deviance test model score of 447.236, compared to 449.353.

Table 9: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to percent body fat and BMI.

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	5.39 (0.080)	5.715 (0.160)	5.735 (0.163)
BMI (n=140)		-0.153 (0.028)***	
Percent body fat (n=140)			-0.095 (0.017)***
Random Part			
Class level variance	0.126 (0.054)*	0.216 (0.139)	0.233 (0.144)
Pupil level variance	1.585 (0.095)***	1.321 (0.167)***	1.294 (0.163) ***
Deviance Test Model	1985.517	449.353	447.236
χ^2 (df)		30.143 (1) ***	32.735(1)* **

Table 10 model 1, highlights the results of the addition of socioeconomic status into the null model, when least deprived was the reference category. Body Image State Scale scores vary as a function of socioeconomic status between pupils ($\beta = -0.313$, $SE=0.145$, $p<0.001$) and socioeconomic status composition between classes ($p<0.05$). Body image state scale scores were significantly lower in the most deprived group compared to the least deprived group, $\chi^2(1) = 4.664$, $df=1$, $p<0.05$.

Model 2 presents the addition of ethnicity into the null model. Body image scores within physical education vary as a function of ethnicity ($\beta = 0.251$, $SE= 0.124$, $p<0.001$) and ethnicity composition between classes ($p<0.05$). Body image state scale scores were significantly higher in black and ethnic minority pupils, compared to white pupils $\chi^2(1) = 4.130$, $df=1$, $p<0.05$.

Model 3 presents the addition of sex into the null model, with male as the reference category. Body image scores within physical education vary as a function of sex at the pupil level only ($\beta = -0.574$, $SE=0.129$, $p<0.001$). Body image state scale scores were significantly higher in girls compared to boys, $\chi^2(1) = 19.869$, $df=1$, $p<0.001$.

Model 4 presents the simultaneous addition of sex, socioeconomic status and ethnicity into the null model. The intercept of 5.460 is the average body image state scale of a white, male within the least deprived socioeconomic status category. All variables maintained a significant relationship with body image, when entered into the model together.

Model 5 presents the addition of body fat along with all three variables entered at model 4. After controlling for body fat, the three demographic variables of socioeconomic status ($\chi^2(1) = 0.098$, $df=1$, $p>0.05$), ethnicity ($\chi^2(1) = 0.132$, $df=1$, $p>0.05$) and sex ($\chi^2(1) = 0.158$, $df=1$, $p>0.05$) no longer contributed to the variance in body image state scale scores. The relationship between body image scores and body fat remained significant ($\chi^2(1) = 12.886$, $df=1$, $p<0.001$).

Model 6 presents the addition of BMI along with the three variables entered at model 4. After controlling for BMI, the only demographic variable that explained the variance in body image state scale scores within physical education was sex ($\chi^2(1)=3.888$, $df=1$, $p<0.05$). Girls had significantly lower body image state scale scores than boys, whilst controlling for BMI ($\beta = -0.742$, $SE= 0.377$, $p <0.05$). Ethnicity ($\chi^2 =0.040$, $df=1$, $p<0.05$) and socioeconomic status ($\chi^2(1) =0.117$, $df=1$, $p>0.05$) no longer contributed to the variance in body image scores. The relationship between body image state scale scores and BMI remained significant, $\chi^2(1) =10.806$, $df=1$, $p<0.01$.

Table 10: Summary of the model estimates for the two level analysis of Body Image State Scale Scores, with respect to demographic variables and after controlling for percent body fat.

Fixed Part	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Intercept</i>	5.39 (0.080)	5.56 (0.125)	5.306(0.090)	5.686 (0.090)	5.460 (0.151)	5.821 (0.338)	6.130 (0.312)
SES (LD ref category) (n=406)		-0.313 (0.145)*			-0.401 (0.139)**	-0.085 (0.272)	-0.094 (0.275)
Ethnicity (white ref category) (n=583)			0.251 (0.124)*		0.419 (0.144)**	0.104 (0.285)	0.057 (0.286)
Sex (Male ref category) (n=593)				-0.574 (0.129)***	-0.795***	-0.175 (0.435)	-0.742 (0.377)*
Sex, SES and Ethnicity (n=404)							
All demographic variables plus percent body fat (n=89)							
All demographic variables plus BMI (n=89)							
Random Part							
Class level variance	0.126 (0.054)*	0.232 (0.091)*	0.115 (0.051)*	0.051 (0.035)	0.051 (0.045)	0.286 (0.181)	0.260 (0.173)
Pupil level variance	1.585 (0.095)***	1.567 (0.115)***	1.599 (0.097)***	1.581 (0.095)***	1.549 (0.114)***	1.048 (0.170)***	1.082 (0.176)***
Deviance Test Model	1985.517	1368.596	1955.294	1969.402	1334.334	269.192	271.750
χ^2 (df)		4.664 (1)*	4.130(1)*	19.869(1)***			

7.4 Discussion

The purpose of this study was to explore associations between situational body satisfaction within physical education and sex, ethnicity and socioeconomic status. Secondly, the intention was to explore associations between body satisfaction and both BMI and body fat. As expected, results revealed that both of the anthropometric variables significantly negatively correlated to body satisfaction scores within physical education, with body fat providing a better fit for the model. In terms of demographic variables females had significantly lower body satisfaction scores within physical education compared to boys, thus significantly lower levels of body satisfaction. Moreover, as hypothesised, body satisfaction scores were significantly lower in white compared to black and ethnic minority groups. Finally, those categorised as least deprived had significantly higher body satisfaction scores than categorised as most deprived. All of the demographic variables lost significance when body fat was entered into the model; however, the significant relationship with sex remained when BMI was entered into the model. This suggests that BMI and body fat function differently on body satisfaction in relation to sex. Girls with a higher BMI were more likely to report body dissatisfaction compared to girls with a higher body fat.

Associations with Demographic Variables

In line with previous research, white individuals had lower levels of body satisfaction compared with black and ethnic minority group individuals (Franko and Streigel, 2002; Neumark-Sztainer *et al.*, 2002; Jones, Fries and Danish, 2007). As detailed in chapter 2.4, it is proposed that socio-cultural pressures to attain a certain physique may differ between ethnic groups. In relation to socioeconomic status the results obtained can be compared with the outcomes identified in a number of other studies whereby females of higher socioeconomic status have reported a higher prevalence of weight loss attempts and dietary restraint behaviours (Wardle and Marshland, 1990; Paxton *et al.*, 1994; Walters and Kendler, 1995) and for lower

socioeconomic status boys to have higher physical self esteem than those of a higher socioeconomic status (O'Dea and Caputi, 2001). The observed results suggest that those of a lower socioeconomic status may better resist dominant socio-cultural messages regarding physical appearance.

Additionally, the study highlighted sex differences in situational body image satisfaction, with boys having significantly higher satisfaction scores within physical education. The state satisfaction scores can be compared with the trait satisfaction scores identified in chapter 5, in which no significant differences in satisfaction scores were identified between males and females, in the same sample. Thus, it may be concluded that the physical education context may be significant in influencing boys' and girls' experiences of their bodies. Previous results in chapter 5 suggest that both boys and girls are equally satisfied/dissatisfied with their bodies and it is only when contextual cues are introduced that sex differences arise. This could suggest that context may play a bigger role in girls' experiences of their bodies compared to boys' and that the physical education context is presenting stimuli to girls that means they have a more negative experience of their bodies.

Associations with Anthropometric Variables

The results indicated that both anthropometric variables are important in explaining variations in body image scores. Body fat provided a slightly better fit for the model, which is in accordance with research that suggests that body fat is socio-culturally undesirable and that BMI doesn't provide an accurate representation of body fatness, thus, direct measurements suggest that body fat is of greater importance in determining body image dissatisfaction than is weight status. This also provides a connection with chapter 1, in which it was identified that the nature of body satisfaction may differ between boys and girls, with the process of dissatisfaction in males potentially being associated by the combined process of a desire for increased muscularity and desire for a thinner body. Utilising the measure of body fat as oppose to BMI has the ability to provide a distinction in the

processes by the utilisation of direct assessment of body fat, as oppose to BMI which is sometimes used as a proxy measure of body fat but is in fact an indication of weight status.

Limitations and Future Directions

The data explored in the current study has several limitations. Firstly, ideally all pupils would have undergone anthropometric assessment, thus, providing a more detailed perspective of how such variables contribute to between pupil variance. However, due to restrictions put in place by the schools with regard to time and access to participants, this was not achieved. Due to the strength of the relationship identified between body image and anthropometric measures ideally this variable would have been incorporated as a control variable in subsequent analysis and chapters, however, the reduction in participant numbers would have meant substantial reductions in statistical power. As such, it was decided that this chapter should act to signify the importance of anthropometric variables in an individual's construction of body image.

Also, grouping participants according to two ethnic categories; white and black and ethnic minority may have masked differences associated with socio-cultural standards of physical attractiveness for each group as research suggests that Asian and black populations differ significantly in terms of body image. However, the mean scores obtained in this study do not suggest significant differences in the body satisfaction scores of black and Asian students in the current study.

7.5 Conclusions

This chapter explored how specific interpersonal or potential between-pupil factors may explain variances in body image states within physical education. The chapter can be positioned with the previous chapter which explored between-class factors in state body image. Although all demographic variables were significant in explaining variance in body image scores, their significance was lost once body fat was controlled for. Thus, this chapter identifies the significant role that the physical construction of a pupil's body be it as measured by BMI or body fat, has upon their experience of their body within physical education. This suggests that how an individual feels about their body is explicably linked to their actual physical size, this reiterates the proposition put forth in chapter 5 that there are clear links between how an individual feels about their body and how the body adheres to socially constructed ideas of physical attractiveness.

Chapter 8: Body satisfaction within physical education and associations with perceptions of competence and motivation for physical education.

8.1 Introduction

The purpose of this study is to explore research question 6, 'Does body satisfaction within physical education relate to perceptions of competence, autonomous motivation, controlled motivation and amotivation after controlling for sex'. Furthermore, as this is the first time in which self determination theory is being addressed within the data sections of this thesis, this section will also seek to explore research question 7, 'Does perceptions of competence relate to different types of motivation for physical education?', in order to test the self determination theory hypothesis that perceptions of competence is an antecedent of motivation.

As acknowledged in the review of literature in section 2.6 positive associations have been identified between perceptions of competence and body satisfaction in a number of studies (Ebbeck and Stuart, 1993; Fox, 2002; Lyu and Pyo, 2005; Richman and Shaffer, 2000; Greenleaf, Boyer and Petrie, 2009). Brunet and Sabiston (2009) propose that social physique anxiety is a controlling factor, thus, based upon the proposition that such controlling factors negatively influence need satisfaction, the relationship between body satisfaction and perceptions of competence may act in the same manner. Causality orientations theory (Deci and Ryan, 1985), a sub theory of self determination theory can be applied to gain a deeper understanding of the proposed relationship. For example the theory expresses that social factors that are perceived as controlling are likely to influence the basic psychological needs and as a consequence levels of self determined motivation. The pressure that society places upon individuals to obtain a certain physique may lead individuals to engage in physical activity as a means of conformity to improve physical appearance and avoid social evaluation (Brunet and Sabiston, 2009). Thus, engagement for such outcomes is likely to be a form of internal control. As a consequence body

satisfaction may be a source of internal control that may undermine motivation to participate in physical activity through the influence upon the basic psychological needs (Brunet and Sabiston, 2009). This relationship has particular relevance within physical education given the focus on physical performance and functionality.

With respect to motivation, section 2.5 explored potential relationships between different forms of motivation and body image and related phenomenon. The majority of the studies identified that autonomous motivation was likely to be associated with more positive perceptions of the body (Cox *et al.*, 2011). In contrast it was identified that controlled forms of motivation are generally associated with negative perceptions of the body. It is suggested that issues such as social physique anxiety, which is closely linked to situational body satisfaction may act as a predictor of motivational regulation (Thogersen-Ntoumani and Ntoumanis, 2006). This research will expand upon those presented in the literature review by directly assessing relationships with body satisfaction and motivation with direct reference to physical education. Although emerging research has begun to explore the notions of social physique anxiety within physical education, this chapter will address situational body satisfaction within context.

With respect to the second research question posed in this section, a review of literature was presented in section 2.5 that explored relationships between basic psychological needs and motivation within physical education, it is based upon the literature presented and the theoretical assumptions of Self determination theory that the research question is posed. It is argued that optimal motivational functioning occurs when the three basic psychological needs of competence, autonomy and relatedness are met. In accordance with self determination theory, high level of competence are likely to precede autonomous motivation, in contrast high levels of amotivation are likely to be preceded by low levels of perceptions of competence. Thus, it is hypothesised that there will be a significant positive relationship between

autonomous motivation and perceptions of competence and a significant negative association between amotivation and perceptions of competence.

In relation to research question 6 it is hypothesised that significant negative relationships will exist between body image satisfaction and amotivation and that significant negative relationships will exist between body image satisfaction and controlled motivation, autonomous motivation and perceptions of competence.

8.2 Methods

8.2.1 Participants and Procedures

Participants were the same participants as detailed in chapter 4.2 and consisted of 620 pupils (53.2% males, 46.8% females) from 37 single sex physical education classes (18 male, 18 female classes, 1 coeducational class) from four schools in the south east and east of England. The number of pupils completing the questionnaire package at time point 1 ranged from 3-28 pupils per class, with an average of approximately 17 pupils per class. The sample consisted of 65.8% white pupils, 19.4% Asian pupils, 8.2% mixed race pupils, 5.6% black pupils and an additional 0.9% pupils that classed themselves as 'other'. The remaining 145 participants did not specify an ethnic group. Ethical approval and participant recruitment was conducting as part of study one, thus the same approaches and techniques were used. Ethical approval and participant recruitment was conducting as part of study one, thus the same approaches and techniques were used.

Participants were asked to respond to a questionnaire during a unit of physical education, responding to the items in the context of their current unit of activity.

8.2.2 Measures

State Body Image

State specific body image within physical education was measured the procedures outlined in chapter 4.3.1.

Perceptions of Competence

Perceptions of competence within physical education was measured using the methods outlined in chapter 4.3.3

Motivation for Physical Education

Motivation for physical education was measured using the procedures outlined in chapter 4.3.2.

8.2.3 Statistical Analysis

Given the nested structure of the data with 620 students nested within 37 physical education classes and the adequate sample size for conducting multilevel analysis, multilevel regression analysis was employed using MLWiN version 2.26. The data was treated as a two level model consisting of students at the first level and classes at the second level. An intercept only model was used to evaluate how much of the variance in body image state scores within physical education can be attributed to both levels. Data was not available for all participants on all measures however the MLWiN software automatically takes into consideration missing data, thus, the analysis was conducted with a different number of participants for each relationship; 471 for perceptions of competence and 564 for motivation. Sex was added as a covariant in all analysis.

8.3 Results (Part one)

Relationships between body satisfaction within physical education, perceptions of competence, autonomous motivation, controlled motivation and amotivation after controlling for sex

Perceptions of competence

For perceptions of competence a two level model yielded a better fit than a one level model ($\chi^2 (1) = 27.83, p < 0.001$), therefore, the data was treated as a two level model with students at the first level and classes at the second level. Results revealed an intercept of 1.91 (S.E = 0.06), which refers to the overall mean of perceptions of competence scores for all 564 participants, across all classes. The random part of the null model identified that perceptions of competence at both the student and class level are statistically significant from zero. Student level variance exceeded class level variance, with class level variance being 88.63% ($\chi^2 (1) = 221.99, p < 0.001$.) and student level variance being 11.39% ($\chi^2 (1) = 6.59, p < 0.05$). The inclusion of student sex significantly ameliorated the model (see table 11, model 1). There were significant differences in perceptions of competence scores for boys and girls, $\chi^2 (1) = 8.93, p < 0.01$. Intercepts of 4.78 (S.E. 0.15) and 4.33 (S.E 0.11) were yielded for boys and girls, respectively. In model 2, body satisfaction within physical education was entered into the model. Results indicated a significant positive relationship between perceptions of competence and body image satisfaction within physical education, $\chi^2 (1) = 71.08, p < 0.001$

Table 11: Summary of model estimates for the two level analysis of perceptions of competence scores in relation to body image state scale scores

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	4.54 (0.09)	4.78 (0.08)	4.70 (0.09)
Sex. (Male ref cat) (n=564)		-0.45(0.15)**	-0.28 (0.13)**
Body satisfaction, controlling for sex (n=471)			0.33 (0.04)***
Random Part			
Class level variance	0.16 (0.06)*	0.11 (0.05)*	0.06(0.04)
Pupil level variance	1.23 (0.06)***	1.23(0.08)***	1.09(0.07)***
Deviance Test Model	1493.758	1485.879	1394.401
x2 (df)		8.93	71.08

Autonomous motivation

For autonomous motivation a two level model yielded a better fit than a one level model ($\chi^2 (1) = 20.41, p < 0.001$), therefore, the data was treated as a two level model with students at the first level and classes at the second level. Results revealed an intercept of 3.17 (S.E = 0.06), which refers to the overall mean of autonomous motivation scores for all pupils, across all classes. The random part of the null model showed that autonomous motivation at both the student and class level are statistically significant from zero. Student level variance exceeded class level variance, with class level variance being 91.63% ($\chi^2 (1) = 264.44, p < 0.001$.) and student level variance being 8.37% ($\chi^2 (1) = 31.48, p < 0.05$). The inclusion of student sex significantly ameliorated the model (see table 12 model 1). Boys had significantly higher levels of autonomous motivation compared to girls, $\chi^2 (1) = 31.48, p < 0.001$. Intercepts of 3.39 (S.E. 0.06) and 2.93 (S.E 0.08) were yielded for boys and girls, respectively. To gain an insight into the influence that body image satisfaction during physical education has upon students autonomous motivation, it was entered into the model, whilst controlling for sex (see table 12, model 2). Results indicated there was a significant positive relationship between autonomous motivation and body fat, whilst controlling for sex, $\chi^2 (1) = 38.6, p < 0.001$.

Table 12: Summary of model estimates for the two level analysis of autonomous motivation scores in relation to body satisfaction within physical education

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	3.17 (0.06)	3.39 (0.06)	3.34 (0.06)
Sex. (Male ref cat) (n=564)		-0.46 (0.08)***	-0.36 (0.20)***
Body satisfaction, controlling for sex (n=552)			0.17(0.03)** *
Random Part			
Class level variance	0.07 (0.03)*	0.01 (0.01)	0.01(0.01)
Pupil level variance	0.71 (0.04)***	0.71 (0.04)***	0.67 (0.04)***
Deviance Test Model	1440.269	1418.554	1356.913
x2 (df)		31.48***	38.6***

Controlled Motivation

For controlled motivation a two level model yielded a better fit than a one level model ($\chi^2 (1) = 22.17, p < 0.001$), therefore, the data was treated as a two level model with students at the first level and classes at the second level. Results revealed an intercept of 2.10 (S.E = 0.06), which refers to the overall mean of controlled motivation scores for all participants, across all classes. The random part of the null model showed that controlled motivation at both the student and class level are statistically significant from zero. Student level variance exceeded class level variance, with class level variance being 88.69% ($\chi^2 (1) = 264.08, p < 0.001$.) and student level variance being 11.31% ($\chi^2 (1) = 7.55, p < 0.05$). The inclusion of student sex significantly ameliorated the model (see table 13, model 1). Boys had significantly higher levels of controlled motivation compared to girls, $\chi^2 (1) = 13.60, p < 0.001$. Intercepts of 2.27 (S.E. 0.07) and 1.92 (S.E 0.10) were yielded for boys and girls, respectively. In model 2, body satisfaction was entered into the model (see table 13, model 2). Results indicated there was no significant relationship between controlled motivation and body satisfaction, whilst controlling for sex, $\chi^2 (1) = 1.28, p > 0.05$.

Table 13: Summary of model estimates for the two level analysis of controlled motivation scores in relation to body satisfaction within physical education

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	2.10 (0.06)	2.27 (0.07)	2.25 (0.07)
Sex. (Male ref cat) (n=564)		- 0.35(0.02)***	-0.36 (0.1)***
Body satisfaction, controlling for sex (n=552)			-0.03 (0.03)
Random Part			
Class level variance	0.07 (0.03)*	0.04 (0.02)	0.04(0.02)
Pupil level variance	0.58 (0.04)***	0.58(0.04)***	0.56 (0.04)***
Deviance Test Model	1331.492	1319.506	1272.783
x2 (df)		13.60***	1.28

Amotivation

For amotivation motivation a two level model yielded a better fit than a one level model ($\chi^2 (1) = 7.61, p < 0.01$), therefore, the data was treated as a two level model with students at the first level and classes at the second level. Results revealed an intercept of 1.91 (S.E= 0.06), which refers to the overall mean of body fat scores for all 564 participants, across all classes. The random part of the null model showed that amotivation was statistically significant from zero at the pupil level but not the class level. Student level variance exceeded class level variance, with class level variance being 95.07% ($\chi^2 (1) = 264.08, p < 0.001$.) and student level variance being 4.93% ($\chi^2 (1) = 7.55, p > 0.05$). The inclusion of student sex did not significantly ameliorate the model (see table 14, model 1). There are no significant different differences in amotivation for boys and girls, $\chi^2 (1) = 0.17, p > 0.05$. Intercepts of 1.94 (S.E.0.08) and 1.89 (S.E 0.11) were yielded for boys and girls, respectively. To gain an insight into the influence that the physicality of the student has upon students autonomous motivation, body fat was entered into the model, whilst controlling for sex (see table 14, model 2). Results indicated there was a significant negative relationship between amotivation and body satisfaction within physical education, whilst controlling for sex, $\chi^2 (1) = 9.02, p > 0.01$.

Table 14: Summary of model estimates for the two level analysis of amotivation scores in relation to body satisfaction

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	1.91 (0.06)	1.94 (0.08)	1.94 (0.08)
Sex. (Male ref cat) (n=564)		-0.04(0.11)	-0.09 (0.11)
Body satisfaction, controlling for sex (n=552)			- 0.09(0.03)**
Random Part			
Class level variance	0.05 (0.03)	0.05 (0.03)	0.04(0.02)
Pupil level variance	0.91 (0.06)***	0.91(0.06)***	0.88(0.06)***
Deviance Test Model	1566.237	1566.071	1514.262
x2 (df)		0.17	9.02**

8.4 Results (Part Two)

Relationships between Perceptions of Competence and Motivation for Physical Education

Results from multilevel analysis revealed an intercept of 4.544 (S.E=0.085), which refers to the overall mean of perceptions of competence scores for all students across all classes, suggesting that on average students perceived their competence within physical education to be just below the midpoint of the scale and thus, viewed their competence in more negative terms.

Autonomous motivation

Table 15, model 0 and 1, represents the relationships between autonomous motivation and sex. Model 2, represents the addition of perceptions of competence. A significant positive relationship was identified between autonomous motivation and perceptions of competence, whilst controlling for sex, sex, $\chi^2(1) = 72.98, p < 0.001$

Table 15: Summary of model estimates for the two level analysis of autonomous motivation scores in relation to perceptions of competence

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	3.17 (0.06)	3.39 (0.06)	3.34 (0.06)
Sex. (Male ref cat) (n=564)		-0.46 (0.08)***	- 0.32(0.09)***
Perceptions of competence, controlling for sex (n=461)			0.28(0.03)** *
Random Part			
Class level variance	0.07 (0.03)*	0.01 (0.01)	0.02(0.02)
Pupil level variance	0.71 (0.04)***	0.71 (0.04)***	0.64(0.04)***
Deviance Test Model	1440.269	1418.554	1112.448
x2 (df)		31.48***	72.98***

Controlled Motivation

Table 16, model 0 and 1, represents the relationships between controlled motivation and sex. Model 2, represents the addition of perceptions of competence. A non significant negative relationship was identified between controlled motivation and perceptions of competence, whilst controlling for sex, $\chi^2 (1) = 1.38, p > 0.05$

Table 16: Summary of model estimates for the two level analysis of controlled motivation scores in relation to perceptions of competence

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	2.10 (0.06)	2.27 (0.07)	2.13 (0.06)
Sex. (Male ref cat) (n=564)		- 0.35(0.02)***	-0.27 (0.8)***
Perceptions of competence, controlling for sex (n=461)			-0.04 (0.03)
Random Part			
Class level variance	0.07 (0.03)*	0.04 (0.02)	0.01(0.01)
Pupil level variance	0.58 (0.04)***	0.58(0.04)***	0.54(0.04)***
Deviance Test Model	1331.492	1319.506	1032.127
x2 (df)		13.60***	1.38

Amotivation

Table 17, model 0 and 1, represents the relationships between amotivation and sex. Model 2, represents the addition of perceptions of competence. A significant negative relationship was identified between amotivation and perceptions of competence, whilst controlling for sex, $\chi^2 (1) = 36.85$, $p > 0.001$.

Table 17: Summary of model estimates for the two level analysis of amotivation scores in relation to perceptions of competence

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	1.91 (0.06)	1.94 (0.08)	1.87 (0.08)
Sex. (Male ref cat) (n=564)		-0.04(0.11)	-0.05 (0.11)
Perceptions of competence, controlling for sex (n=461)			- 0.23(0.04)**
Random Part			
Class level variance	0.05 (0.03)	0.05 (0.03)	0.03(0.02)
Pupil level variance	0.91 (0.06)***	0.91(0.06)***	0.83(0.06)***
Deviance Test Model	1566.237	1566.071	1233.982
x2 (df)		0.17	36.85***

8.5 Discussion

The aim of this chapter was to explore research question 6 'Does body image within physical education relate to perceptions of competence, autonomous motivation, controlled motivation and amotivation after controlling for sex'. The results suggest that those that have higher levels of autonomous motivation for physical education and higher perceptions of competence towards physical education are likely to be more satisfied with their bodies in physical education. In contrast, those that have higher levels of amotivation for physical education are more likely to be less satisfied with their bodies during physical education. The results between controlled motivation and body satisfaction are not significant but imply that those with higher levels of controlled motivation are more likely to experience body dissatisfaction in physical education.

Secondly, this chapter addresses research question 7 'Does perceptions of competence relate to different types of motivation for physical education?' Results of the chapter are in accordance with the hypothesis; higher levels of perceptions of competence are associated with higher levels of autonomous motivation. In contrast lower levels of perceptions of competence are associated with lower levels of autonomous motivation and controlled motivation. All relationships remained significant after controlling for sex.

The outcomes of the current study are consistent with findings identified in previous research that has explored relationships between perceptions of competence and body image and related phenomenon, which suggests higher levels of personal negative evaluations of the body by an individual are associated with lower perceived levels of competence (Ebbeck and Stuart, 1993; Fox, 2002; Lyu and Pyo, 2005; Richman and Shaffer, 2000; Greenleaf, Boyer and Petrie, 2009). It is suggested that the proposed mechanisms underlying the relationship are concerned with the potential for body satisfaction to be a controlling factor influencing the basic psychological needs of Self Determination Theory.

Furthermore, the findings in relation to motivation can be contrasted from the findings identified by Cox *et al.*, (2011) in their exploration of relationships between social physique anxiety and motivation within physical education, in which negative relationships were identified between autonomous forms of motivation and body satisfaction. Thus, participating in physical education through feelings of enjoyment or due to the perceived value associated with participation is linked to higher feelings of body satisfaction. Consistent with the current study the relationship between introjected motivation and social physique anxiety was not statistically significant. Although in the current study introjected motivation was grouped with external regulation to form controlled motivation. It has however, been noted in other studies that social physique anxiety is a significant positive correlate of controlled motivation (Thogersen-Ntoumanis *et al.*, 2006; 2007). However, the positive nature of the relationship between body satisfaction and controlled motivation in the current study is of the same direction and suggests that body dissatisfaction may be associated with engagement in physical education through feelings of guilt or external pressure.

The results of this chapter also give support to the notion of perceptions of competence as an antecedent of motivation, although causation cannot be established. The results can be contrasted with those from other studies, by which perceptions of competence strongly relates to physical activity motivation (Ferrer-Caja and Weiss, 2000; Ntoumanis, 2005; Standage *et al.*, 2006; Brunet and Sabiston, 2009).

Limitations and Future Directions

Limitations of this chapter should be noted. Firstly, external regulation and introjected regulation was combined to form controlled motivation. Also, identified and integrated regulation was combined to form autonomous motivation. Although this is a common approach to use, it can mask the unique contributions of each of the distinct forms of motivation, thus future research should explore the unique contributions of each form of motivation. This may be particularly relevant when exploring the contributions of the two forms of controlled motivation.

Future studies should explore the relationship between body satisfaction in physical education and the other basic psychological needs of autonomy and relatedness in order to further the findings of the current study. It may be that the relationship between body satisfaction and motivation are dependent upon the extent to which the three basic psychological needs are met.

Finally, the cross sectional nature of the study limits the ability to draw firm conclusion; exploring how the variables co-vary over time may provide a better insight into the nature of the relationships.

8.6 Conclusion

This chapter explores further some of the neglected areas of research with respect to the body within physical education, expanding upon the areas that have been addressed in previous chapters. Moreover, the results presented in this chapter begin to provide evidence for the importance of adopting and promoting self determined motivation within physical education, which will be further explored in the subsequent two chapters. Furthermore as this chapter was the first to explore facets of self determination theory it confirms the proposition put forth by the theory, that competence is an antecedent of autonomous forms of motivation, by exploring the relationship between the two variables. This can be put into the context of this chapter and subsequent chapters that utilise self determination theory as a guiding framework.

Chapter 9: Transfer of learning and associations with perceptions of competence, body satisfaction and motivation in physical education

9.1 Introduction

The aim of this chapter is to address research question 8, ‘Does perceived competence, motivation for physical education and situational body image relate to transfer of learning?’ Firstly the chapter will examine if transfer of learning has relationships with amotivation, autonomous motivation, controlled motivation, body satisfaction and/or perceptions of competence. Secondly, the chapter will explore if students perceive physical education stimulates their participation in sports activities outside of school and if these perceptions differ between boys and girls. The chapter also aims to explore if variations in transfer of learning scores can be attributed to differences between physical education classes. Finally, the chapter will explore if there are associations between the pupils transfer of learning scores and body fat scores. This will be done as a separate analysis as due to reduced participant numbers in respect to anthropometric variables, it cannot be entered as a covariate in the first models.

As documented in section 2.7, there is a growing level of concern regarding the physical activity levels of children and adolescents. Physical education has been highlighted as a key vehicle through which to promote and encourage childhood physical activity (Cale and Harris, 2006) and to promote lifetime physical activity (Shephard and Trudeau, 2000). Chapter 2.7 presented the concept of transfer of learning, in which literature was presented to argue the notion that transfer of learning needs to occur in order to obtain the objectives of lifetime physical activity associated with physical education (Haerens *et al.*, 2010). In the present study we have measured to what extent pupils themselves experience physical education as stimulating them to become active in leisure time.

Based on the ambition of physical education to promote physical activity beyond the context it seems logical to investigate the processes underlying transfer of learning and the factors that may be associated with students

experiences of physical education and their subsequent interpretations of the impact that physical education has upon their engagement in physical activity outside of school. Based upon the literature presented in chapter 2, perceptions of competence, motivation for physical education and body satisfaction are all considered variables that could potentially relate to an individual's transfer of learning.

With specific regard to motivation for physical education, chapter 2.5 presented literature which supported the notion of self determination theory as a potential explanatory mechanism for the process of transfer of learning. The studies presented in the literature review concluded that the adoption of autonomous motivation in physical education was associated with increased intentions to be active outside of school (Chatzisarantis and Hagger, 2009) and increased leisure time physical activity (Ommundsen and Kvalø, 2007; Cox, Smith and Williams, 2008). In contrast, amotivation and controlled motivation is often associated with negative outcomes, such as lower decreased intentions to be active (Standage *et al.*, 2003). In the same respect it was identified that those with higher levels of competence and perceptions of competence were more likely to be physically active in the leisure time (Hyams *et al.*, 1995; Stonecipher *et al.*, 1995; Carroll and Loumidis, 2001). The relationships between body satisfaction and physical activity was also presented in the review of literature, although results were not fully conclusive it was proposed that body satisfaction is likely to be a dominant predictor of physical activity behaviours (Burgess *et al.*, 2006), with higher body satisfaction being associated with higher physical activity and sports participation in adolescents (Neumark-Sztainer *et al.*, 2004). Moreover, the study by Bevans *et al.*, (2010) highlighted the potential for physical education to play a role in the relationship between body image and physical activity.

It is hypothesised that boys will have significantly higher transfer of learning scores than girls; this is in accordance with literature that identifies sex differences in relation to boys and girls physical activity participation and physical education experiences (Trost *et al.*, 2002). Secondly, it is hypothesised that the majority of the variance in transfer of learning scores will be situated at the between pupil level, and could potentially be attributed to individual personal factors such as demographic factors, personality differences etc. However, it is hypothesised that a significant amount of the variance in transfer of learning scores will be attributed to between class differences. Although not measured in this study, between class factors could be explained by differences in teaching styles and environmental classroom factors between physical education classes. Finally it is hypothesised that there will be a significant positive association with perceptions of competence, body image, controlled motivation for physical education and autonomous motivation for physical education with transfer of learning scores. It is hypothesised that there will be significant negative correlation between amotivation and transfer of learning scores. Finally in respect to body fat it is hypothesised that a significant negative association would be identified between the two variables.

9.2 Methods

9.2.1 Participants and Procedures

Participants were the same participants as detailed in chapter 4.2 and consisted of 620 pupils (53.2% males, 46.8% females) from 37 single sex physical education classes (18 male, 18 female classes, 1 coeducational class) from four schools in the south east and east of England. The number of pupils completing the questionnaire package at time point 1 ranged from 3-28 pupils per class, with an average of approximately 17 pupils per class. The sample consisted of 65.8% white pupils, 19.4% Asian pupils, 8.2% mixed race pupils, 5.6% black pupils and an additional 0.9% pupils that classed themselves as 'other'. The remaining 145 participants did not specify an ethnic group. Ethical approval and participant recruitment was

conducting as part of study one, thus the same approaches and techniques were used. Ethical approval and participant recruitment approaches and techniques are outlined in the methodology section of this thesis.

Participants were asked to respond to a questionnaire during a unit of physical education, responding to the items in the context of their current unit of activity. The researcher or teacher was present to ensure that questionnaires were filled out individually and accurately, and answered possible questions.

10.2.2 Measures

Body Satisfaction in Physical Education

Body satisfaction within physical education was measured using the procedure outlined in chapter 4.3.1

Behavioural Regulation in Physical Education Questionnaire (BREPO)

Motivation for physical education was measured using the procedures outlined in chapter 4.3.2.

Perceptions of competence

Perceptions of competence in physical education were measured using the procedures outlined in chapter 4.3.3.

Transfer of Learning

Transfer of learning was measured using the procedures outlined in chapter 4.3.5

9.2.3 Statistical Analysis

Given the nested structure of the data with 620 students nested within 37 physical education classes and the adequate sample size for conducting multilevel analysis, multilevel regression analysis was employed using MLWiN version 2.26. The data was treated as a two level model consisting of students at the first level and classes at the second level. An intercept only model was used to evaluate how much of the variance in transfer of learning scores within physical education can be attributed to both levels. Data on transfer of learning was not available for all participants; however the MLWiN software automatically takes into consideration missing data, thus, the analysis was conducted with 554 of 730 students, when the dependant variable was transfer of learning.

A null model was created for transfer of learning (see table 18). In models 1-5 body satisfaction, perceptions of competence, amotivation, autonomous motivation and controlled motivation were entered separately as predictors into the model. In model 6 all variables were entered simultaneously as predictors into the model. In model 7, all variables were entered as predictors in the model, whilst adding sex as a covariant.

9.3 Results

An average transfer of learning score of 2.12 (± 1.13), on a five point Likert scale ranging from 0-4 was found for the whole sample, suggesting pupils are just above moderately stimulated to engage in sports activities outside of school. Males reported significantly higher transfer of learning scores (2.42 ± 1.06) than girls (1.81 ± 1.12), $\chi^2 (1) = 43.16, p < 0.001$. The data showed that 27.4 percent of the participants (38.3% girls, 19.1% boys) felt that physical education did not stimulate them to engage in sports activities outside of school (scores of 0 and 1). An average score (score 2) was indicated by 35.4 percent of the participants. More students reported high scores on the transfer of learning question, with 37.2 per cent of students reporting a score of 3 or 4 (26.2% girls, 46.4% boys), suggesting that students feel that physical education does stimulate them to engage in sports activities outside of school.

Between pupil factors explained 92% of the variance in transfer of learning scores, $\chi^2 (1) = 259.359, p < 0.001$, with the remaining 8% of the variance being explained by between class variance, $\chi^2 (1) = 5.631, p < 0.05$.

Although the majority of the variance in transfer of learning scores within physical education can be attributed to between pupil factors, variance in transfer of learning scores were also significant at the between class level, suggesting that there are factors operating at the class level to influence transfer of learning. In order to see if the predictor variables significantly predicted the variance in transfer of learning scores, all variables were entered into the model separately (see table 18, models 1-5).

Model 1 represents the results of the addition of body image into the null model. Transfer of learning scores vary as a function of body image scores between pupils ($\beta = 0.206, SE = 0.036, p < 0.001$) and between classes ($p < 0.05$). The correlation between the two variables is positive, $\chi^2 (1) = 33.098, p < 0.001$.

Model 2 represents the addition of perceptions of competence into the null model. Transfer of learning scores vary as a function of perceptions of competence scores between pupils ($\beta=0.374$, $SE=0.042$, $p<0.001$) and between classes ($p<0.05$). The correlation between the two variables is positive, $\chi^2(1)=78.208$, $p<0.001$.

Model 3 represents the addition of amotivation into the null model. Transfer of learning scores vary as a function of amotivation between pupils ($\beta=-0.264$, $SE=0.048$, $p<0.001$) and between classes ($p<0.05$). The relationship between the two variables is negative, $\chi^2(1)=29.961$, $p<0.001$.

Model 4 represents the addition of autonomous motivation into the null model. Transfer of learning scores vary as a function of autonomous motivation between pupils ($\beta=0.614$, $SE=0.05$, $p<0.001$) but not between classes ($p>0.05$). The relationship between the two variables is positive, $\chi^2(1)=153.672$, $p<0.001$.

Model 5 represents the addition of controlled motivation into the null model. Transfer of learning scores differ as a function of controlled motivation between pupils ($\beta=0.184$, $SE=0.061$, $p<0.01$) and between classes ($p>0.05$). The relationship between the two variables is positive, $\chi^2(1)=9.148$, $p<0.01$.

In model 6, all of the variables were entered simultaneously, autonomous motivation ($\chi^2(1)=39.633$, $p<0.001$), controlled motivation ($\chi^2(1)=6.344$, $p<0.001$), body image ($\chi^2(1)=7.113$, $p<0.01$) and perceptions of competence ($\chi^2(1)=16.777$, $p<0.001$) all held significance. Amotivation no longer significantly related to transfer of learning ($\chi^2(1)=3.108$, $p>0.05$).

In model 7, all the variables were entered simultaneously whilst controlling for sex. In this model significant positive associations remained significant for body image ($\chi^2 (1) = 5.234, p < 0.05$), perceptions of competence ($\chi^2 (1) = 14.493, p < 0.001$), autonomous motivation ($\chi^2 (1) = 37.185, p < 0.001$) and controlled motivation ($\chi^2 (1) = 5.442, p < 0.05$). The relationship between amotivation and transfer of learning remained negative but insignificant ($\chi^2 (1) = 3.402, p > 0.05$).

Table 18: Summary of Multilevel Analysis Exploring Relationships with Transfer of Learning.

Fixed Part	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Intercept</i>	2.117 (0.071)	2.120 (0.070)	2.115 (0.068)	2.135 (0.075)	2.129 (0.054)	2.116 (0.071)	2.130 (0.061)	2.303 (0.080)
Body satisfaction(n=536)		0.206(0.036) ***					0.102 (0.038)**	0.087 (0.038)*
Perceptions of competence (n=440)			0.374 (0.042)***				0.186 (0.045)***	0.174 (0.045)***
Amotivation (n=515)				-0.264 (0.048)***			-0.103(0.059)	-0.107 (0.058)
Autonomous Motivation (n=515)					0.614 (0.050)***		0.426 (0.068)***	0.411 (0.067)***
Controlled Motivation (n=515)						0.184 (0.061)**	0.184 (0.073)***	0.169 (0.072)*
All Variables (n=417)								
All variables, controlling for sex (n=417)								
Random Part								
Class level variance	0.102 (0.043)*	0.095 (0.041)*	0.077 (0.039)*	0.116 (0.047)*	0.037 (0.024)	0.092(0.042)*	0.055 (0.030)	0.029 (0.024)
Pupil level variance	1.171 (0.073)***	1.096 (0.069)***	1.003 (0.070)***	1.087 (0.070)***	0.920 (0.059)***	1.143(0.074)** *	0.811 (0.059)***	0.812 (0.058)***
Deviance Test Model	1689.429	1599.202	1273.127	1536.819	1434.427	1556.910	1116.321	1108.528
χ^2 (df)		33.098(1)***	78.202(1)***	29.961(1)***	153.627(1)***	9.148(1)**		

Table 19: Summary of model estimates for the two level analysis of transfer of learning scores in relation body fat

Fixed Part	Model 0	Model 1	Model 2
<i>Intercept</i>	2.12 (0.07)	2.42 (0.07)	2.25(0.19)
Sex. (Male ref cat) (n=564)		-0.45(0.15)**	-0.25 (0.29)
Body Fat, controlling for sex (n=137)			-0.03(0.02)
Random Part			
Class level variance	0.10 (0.04)*	0.11 (0.05)*	0.00(0.00)
Pupil level variance	1.17 (0.07)***	1.23(0.08)***	1.35(0.17)***
Deviance Test Model	1689.429	1663.145	382.248
x2 (df)		43.16***	0.75

To gain an insight into the influence that the physicality of the student has upon students transfer of learning, body fat was entered into the model, whilst controlling for sex (see table 19, model 2). Results indicated there was no significant relationship between autonomous motivation and body fat, whilst controlling for sex, $\chi^2 (1) = 0.75, p > 0.05$.

9.4 Discussion

This chapter consisted of three main aims, which sought to address research question 8 by exploring transfer of learning in year 9 physical education. Firstly, the chapter investigated the extent to which body satisfaction perceptions of competence and motivation for physical education correlated with transfer of learning scores, after controlling for sex. Secondly, the study explored the extent to which year 9 pupils felt that physical education stimulated them to engage in physical activity beyond the school day, and if perceptions differed between boys

and girls. The final aim explored if variations in transfer of learning scores are situated at both the between class and between pupil level. Self determination Theory was used as a guiding framework in exploring relationships between motivation and transfer of learning.

Self Reported Concurrent Transfer of Learning in Boys and Girls

The present study highlights that approximately only a third of students felt that physical education stimulated them to engage in activity outside of school. Additionally, in the current study more boys than girls felt that physical education stimulated them to engage in sports activities outside of school. Results of the current study can be compared to those of a study conducted by Haerens *et al.*, (2010). The study consisted of a sample of university students that were asked to report information on concurrent and delayed transfer of learning. Concurrent transfer of learning was retrospectively reported using the same question utilised in the current study. The study identified 61.9% of students reported transfer scores of 3 or 4, compared to 27.4% in the current study. Discrepancies in the scores between the two studies could be attributed to the retrospective nature of the question posed by Haerens *et al.*, (2010) and the diminished ability of university students to be able to accurately recall the extent to which physical education stimulated them to engage in physical activity outside of school. Furthermore, discrepancies between the scores may be a result of the sex composition of the sample utilised by Haerens *et al.*, (2010). The sample of students was approximately two thirds female, thus, as the current study highlighting sex differences in transfer of learning scores, this may be further explanation for variations in the scores between the studies. Additionally, differences in terms of the demographics of the sample may account for the differences between the two studies, as the sample utilised by Haerens *et al.*, (2010) was drawn from universities students and thus are likely to possess certain characteristics with respect to socioeconomic status than that of a sample of school children.

Finding of the study relate to a substantial body of literature that has identified sex differences in boys and girls physical activity levels and intentions to be active

(Trost *et al.*, 2002). However, this study has provided an alternative perspective to the study of sex differences in physical activity by exploring the impact that sex has upon the interpretation of the role that physical education plays in the adoption of a physically active life beyond the classroom. This provides a unique insight into how physical education is perceived differently by boys and girls.

These findings provide a unique contribution to the existing literature which explores the role of physical education in transfer of learning, and more specifically the promotion of lifelong physical activity.

Within and Between Class Variance in Transfer of Learning

With respect to the variance of transfer of learning scores at both the pupil and class level, as hypothesised multilevel analysis revealed that transfer of learning scores varied, for the most part, as a function of pupil level differences, thus, personal differences between individuals are likely to provide most of the contribution to variation in scores. However, as the variance in scores was also significant between physical education classes this suggests that there might also be factors operating at the class level that influence pupils' perception that physical education stimulates them to engage in sports activities outside of school. Although it may be argued that as only 8% of the variance in transfer of learning scores can be attributed to factors within the classroom, that the role of the classroom environment in supporting this concept and thus promoting physical activity beyond the school day is minimal. However, as Aelteman *et al.*, (2012) argue with respect to between class and between pupil differences in motivation, differences at the between class level may not be identified, as teachers have the potential to impact individuals at the pupil level, that may not be identified at the between class level.

These findings highlight the role that class and/or teacher based factors play in the role of pupils' perceptions that physical education stimulates them to engage in sports activities outside of school.

Correlates of Transfer of Learning

In relation to final purpose of the study and exploring to what extent a number of variables relate to pupils transfer of learning scores, pupils that perceived themselves as more competent within physical education also reported a higher perception that physical education stimulated them to engage in activities outside of school. With respect to motivation results indicated that both controlled and autonomous motivation within physical education was associated with higher transfer or learning scores, thus, a positive relationship between the variables. Trends in the results also suggested that those with high amotivation scores were more likely to report lower transfer of learning scores, although the results were not statistically significant. These results are in accordance with other studies that have identified autonomous forms of motivation to have associations with increased intentions to be active (Chatzisarantis and Hagger, 2009) and physical activity (Ommundsen and Kvalo, 2007; Cox, Smith and Williams, 2008).

In the same respect, students with higher body satisfaction scores within physical education were more likely to report higher transfer of learning scores. To the authors knowledge no research has been conducting which explores the nature of the relationship between the two variables. It is proposed that the mechanisms underlying the relationship are concerned with increased body anxiety in those with low levels of body satisfaction (Neumark-Sztainer *et al.*, 2004). This study provides initial insights into the complex interplay between situational body satisfaction and behaviours related to physical activity, interestingly, highlighting the relationship between contextual levels of body satisfaction and how students perceive physical education to stimulate them to engage in sports activities beyond the school day. The results imply that there maybe foundations for developing interventions to enhance student body image within physical education as a means of enhancing the perceived role that physical education has in them adopting a physically active life beyond the school day.

Transfer of Learning and Body Fat

Results of the current study suggest that the body fat levels of a pupil within physical education, do not relate to transfer of learning. This goes against the proposed hypothesis that individuals with higher levels of body fat may have different experiences of physical education. The observed relationships between the variables were small and insignificant. These results suggest that the physicality of the student in relation to body fat do not relate to their experiences of physical education, in relation to transfer of learning. This can be contrasted by the results obtained in previous chapters in which motivation for physical education and perceptions of competence significantly correlated with body satisfaction within physical education. Thus, it may be concluded that the importance of motivation and perceptions of competence within physical education is less concerned with the physical construction of the body, but more so with how satisfied an individual is with their body.

Furthermore, this chapter allowed for an understanding of how the measures of the subsample that underwent anthropometric assessments compares with the values obtained for the whole sample, thus firstly displaying the representative nature of the subsample. This can be achieved by comparing the mean values obtained in the main sample with the values obtained in the subsample in this chapter.

Limitations and Future Directions

The current study has several limitations. First, as Haerens *et al.*, (2010) suggest a more comprehensive measure of transfer of learning would be advantageous. Secondly, future research should incorporate objective measures of physical activity in order to explore the extent to which adolescents perceptions of the extent to which physical education stimulates them to engage in sports activities outside of school correlates with actual leisure time physical activity. Moreover, longitudinal studies that track adolescents transfer of learning throughout adolescents into adulthood, would allow for a greater understanding of the role of physical education in lifetime physical activity. Moreover, longitudinal research

could focus on the extent to which perceptions of transfer of learning differ by lesson content throughout the lifespan, based upon the proposition by Fairclough (2002) that lifetime activities may have a greater carry over effect into physical activity throughout the lifespan. Moreover, as the results suggest that there are between class differences in transfer of learning scores future research should explore how teacher and classroom factors contribute to between class variance.

In relation to the exploration between transfer of learning scores and body fat limited by a relatively small sample size. As explained in the methodology, access to pupils for anthropometric measurements was limited by the schools. Secondly, and related to the first issue is the assessment of body fat as a continuous variable. It may have been advantageous to group participants into two categories; those with 'healthy' body fat levels and those whose body fat level exceed the 'healthy' guidelines. This would have allowed for the direct comparison between the two groups and may have provided slightly different outcomes. However, related to the issue of sample size this did not seem an appropriate approach to use for data analysis due to the relatively small proportion of pupils that would have been deemed 'unhealthy' due to their body fat levels. Moreover, the study may have benefited from more advanced methods of body fat analysis.

9.5 Conclusion

This study provides further evidence for the notion that physical education does not play a significant role in pupils' engagement in sport and physical activity beyond the school day, as children were less likely to report positive transfer of learning scores. Moreover, the results suggests that transfer of learning may be occurring more often in boys, thus, agreeing with a body of research which suggests boys and girls experiences of physical education differ, with various behavioural and cognitive outcomes. For physical education to achieve the aim of transfer of learning and lifelong physical activity participation, it appears that there should be a focus upon how this process could be better facilitated in females. Results suggest that motivation, perceptions of competence and body satisfaction within physical education may all be influential in the process of transfer of learning

Chapter 10: Overall Discussion

10.1 Introduction

The data chapters that constitute this thesis were designed to further the understanding of the relationships between body image, motivation and perceptions of competence in physical education. Through these data chapters the research questioned that were outlined in chapter 3 were examined. This chapter will present a summary of the overall findings of the thesis, followed by the practical implications that the findings may have. Following this the study limitations will be identified and any proposed future research directions will be discussed.

10.2 An Overview of the findings of the study

The findings from this thesis highlight the prevalence of body image issues in 13-14 year old pupils with 75-80% and 71%-80% of boys and girls, respectively being dissatisfied with their current body size. Chapter five (research question 1) not only explored the prevalence of body dissatisfaction but also explored the nature of body dissatisfaction. The findings confirmed previous research which suggests that female body dissatisfaction is predominantly characterised by a desire for a smaller body and male body dissatisfaction is characterised by a combined process of increased body size in some individuals and decreased body size in other individuals. It is hypothesised that such results were obtained due to western societal standards of physical attractiveness that are associated with a slender physique in females and a slim but muscular body in males (Gorely *et al.*, 2003). In contrast to previous research findings trait body satisfaction did not significantly differ by socioeconomic status (Wang *et al.*, 2006) or ethnicity (Franko and Steigel, 2002), however, this may be a result of methodological limitations which will be addressed later in this section. The abundance of body image disturbance in the sample population signifies the prevalence of this issue in young people. Although this study did not explicitly examine the physical and psychological outcomes, the literature review presented in chapter 2, provides a rationale as to why possessing high levels of body dissatisfaction may have implications for psychological and physical well being and thus the importance of

understanding the prevalence of body image disturbance and related issues in the sample population.

Chapter six (research question 2 and 3) explored the situational variability of body satisfaction within physical education and relationships that variations may have with lesson content. Firstly the percentage of variance that could be attributed to between pupil, between time and between class differences was calculated. It was identified in chapter six that the majority of the variance in body satisfaction in physical education can be attributed to between time and between pupil differences, with chapter seven (research question 4 and 5) identifying body fat as being the most significant variable measured in the current thesis. Findings of the current study can be related to previous research in which body fat has correlated with measures of body satisfaction and has been identified as a factor which contributes to the development of body image disturbances and associated issues (Rosenblum and Lewis, 1999; Duncan *et al.*, 2004)

Although chapter six identified that the majority of the variance in pupils' contextual body satisfaction scores can be attributed to factors operating at the pupil level and time level, it was also identified that a significant proportion of the variance in scores can be attributed to factors operating at the class level. Furthermore, it must be acknowledged that class and pupil level variance interacts and as such class level variance may manifest itself through the pupil level. The quantitative data analysed in this data alongside the qualitative focus group sessions suggest that with respect to temporal experiences of the body within physical education, lesson content itself may not be influential, or not as influential as the process of classroom entry, with factors such as the changing room environment emerging as key themes in the focus group sessions.

Chapter eight highlighted the relationships between body satisfaction, motivation and perceptions of competence from a Self Determination Theory perspective. The results suggested that if an individual is more satisfied with their body in physical education they are more likely to be autonomously motivated and less likely to be amotivated. Additionally, positive associations were established between body satisfaction in physical education and perceptions of competence.

Chapter eight also allowed for the exploration of the relationship between perceived competence and amotivation, controlled motivation and autonomous motivation within physical education, in order to explore the self determination theory hypothesis that competence is an antecedent of motivation. Results of the chapter agree with the hypothesis put forth through self determination theory that higher levels of perceptions of competence are associated with higher levels of autonomous motivation. In contrast lower levels of perceptions of competence are associated with lower levels of autonomous motivation and controlled motivation.

The final data chapter, chapter nine, investigated the extent to which the variables explored throughout the thesis related to pupils transfer of learning scores. It was identified that pupils with higher levels of body satisfaction, autonomous motivation, controlled motivation and perceptions of competence were more likely to perceive that physical education stimulated them to engage in sport activities outside of school. In contrast pupils with higher amotivation scores were more likely to report that physical education did not stimulate them to engage in sports activities outside of school.

The results of the current thesis reinforce the notion that body image concerns are highly prevalent within both adolescent boys and girls and that the nature of the construction of an individual's body image is truly a complex interaction of the individual and the environment. Additionally, the results suggest that how a pupil views their body within physical education may have implications for their motivation and subsequent transfer of learning to leisure time physical activity, although causation cannot be established. The key contribution that this study makes to psychology and physical education based literature is context; body image has not previously been explicitly addressed in the nature of this study within physical education and although the results do not provide conclusive evidence to suggest that what is done and how things are done within physical education influences a pupils experience of their body and subsequent behavioural outcomes, but it does provide initial evidence to suggest that notions of classroom entry maybe contributing to pupils negative experiences of their body within this context. The study warrants the need for further qualitative investigation to

address this issue and also further quantitative approaches combining the measures psychological variables with contextual and pedagogical factors, in order to establish practical interventions or applications.

10.3 Overall practical Implications

Given the consistent proposition put forth that physical education has a prominent role to play in the process of transfer of learning and lifetime physical activity and the subsequent health benefits of the adoption of a physically active lifestyle, the results of the thesis contribute to a growing body of literature that has explored the psychological mechanisms that underpin the role of physical education in achieving this objective. Thus, the findings of this thesis may have practical implications.

The results presented in data chapter 8 alongside supportive theoretical literature in relation to social physique anxiety suggest that fostering a positive body image within physical education may have implications for increased perceptions of competence and autonomous motivation. Although there is empirical support for the notion that interventions to increase self determined forms of motivation should be aimed at targeting the psychological mediators of autonomy, competence and relatedness, results from the current study suggest a need to further understand the relationship between body satisfaction within physical education and the psychological mediators. This initial insight suggests that there may be justification for developing interventions or strategies within physical education aimed at increasing levels of situational body image, which theoretically could have potential implications for physical activity behaviours. However, more work needs to be done to determine exact nature of the relationship between body satisfaction, the antecedents of motivation and self determined motivation itself. The results presented in data chapter six began to explore some of the potential practical strategies through which this can be achieved, by the examination of differences in body satisfaction scores in relation to lesson content. However, much more research needs to be conducted in order to explore how contextual and pedagogical variables within physical education

relate to body satisfaction in order for appropriate strategies to be devised to alleviate body image concerns within the context.

Alongside potential practical strategies surrounding body image satisfaction within physical education, specifically chapters 8 and 9 explored aspects of self determination theory. The application of self determination theory within physical education has the recognised potential to act as an intervention to impact behaviours, cognitions and affects both within and beyond the classroom (as identified in chapter 2). Chapter 8 explored the relationship between perceptions of competence and autonomous motivation. This provides support for the notion that perceptions of competence is an antecedent of self determined motivation and teachers may be able to impact students self determined motivation through strategies aimed at manipulating competence. Practically teachers should focus upon fostering perceptions of competence in pupils by applying need supportive behaviours within the classroom. The results of chapter seven suggests that the subsequent adoption of more self determined forms of motivation is likely to have implications for pupils perceptions that physical education stimulates them to engage in sports activities outside of school, thus, further justifying the need to develop practical strategies aimed at enhancing more self determined forms of motivation. Overall, this section demonstrates how the findings of the thesis can be utilised to inform practical strategies, however, as will be addressed in the subsequent chapter the study has several limitations that should be addressed in future research.

10. 4 Limitations

Throughout each data chapter presented within this thesis limitations and future research directions have been presented. This section will seek to combine the major limitations identified throughout the thesis and expand upon general limitations that may influence the conclusions drawn from the findings of the research.

The overall study is limited by the study design; the cross sectional, correlational design with no study intervention allows for only the exploration of relationships between variables and does not allow for causation to be established. The approach used permitted the answering of the proposed research questions; however, to further the field of study in this area it may be appropriate to design interventions by which establishing cause and effect.

The part of the study presented in chapter six is specifically limited by the nature of classification of lesson types. As discussed in the chapter, during the study design process it was anticipated that the units would be selected to incorporate a balanced range of activities; those which reflected appearance based activities or activities whereby performance is associated with a lean physique and activities and those activities which do not. However, due to the restricted access put in place by schools it was not possible to obtain an equal balance of activities. Henceforth, this meant that not only the balance of activities between categories was unequal but the range of activities within each category was much more diverse than initially anticipated. This may have implications for the findings of the results if the activities within each group are more heterogeneous than initially was intended. For example, if all activities within the fitness and artistic group were based around dance this may lead us to drawn more firm associations about the relationship between lesson contents of this nature. The study could be advanced by grouping activities into more homogenous groups, for example, dance and fitness in separate categories and the same division for racket sports and ball games. This would allow for a deeper exploration of more specific units of activity. This was not possible in the current study due to the unequal balance of activities that resulted through the school selecting units of activities based upon convenience.

Another related issue in regard to lesson content which could be proposed to extend future research is the investigation of swimming within physical education. The literature review put forth a strong argument for the proposition of swimming as a lesson content that is likely to provoke situational disturbances in body image. However, it was not possible to pursue this as only one of the schools that

took part in the study had an onsite swimming pool. Furthermore, the school that did have the facilities to incorporate swimming more prominently into their schedules did not have swimming on the year 9 curriculum. Future research should explore further issues around the relationships between swimming during physical education and state body image disturbances.

With regard to the assessment of anthropometric variables the study would have been enhanced if information was available for all participants. If this information was available for all pupils this measure could have been entered as a covariate in the analyses involving measures of body image. This could have strengthened the findings of the thesis as data chapter three highlighted the role that these variables may have in an individual's experience of their body. As previously discussed, the initial aim of the study design was to collect as much anthropometric data from the study population as possible, with at least a sample from each physical education class. In the same respect as issues surrounding the negotiation on access into specific lessons for the collection of questionnaire based data the same issues arose with regard to gaining access to pupils for measurements of BMI and body fat. Out of the four schools that were part of the fieldwork process, three schools permitted access for anthropometric data, however, the extent of entry also varied between schools. In retrospect the willingness of schools to participate in the study would have probably been advanced if this measure was removed.

Chapter 9 could be advanced by a measure of physical activity in order to explore the extent to which the measured variables relate to actual physical activity scores. In the initial planning stages it was anticipated that objective measures of physical activity would be obtained for a sample of participants from each physical education class, however, it slowly became clear that alongside the access problems described above, schools were also not compliant to give access to pupils for physical activity assessments. Future research should look to incorporate objective physical activity measures in order to further the findings of the current study.

The research could also be advanced by the addition of more contextual variables within physical education. For example, the addition of a measure that explored

teacher behaviours and the structure of the learning environment would expand upon the work presented in the current thesis. Information on the location and environment in which the lessons were conducting would provide additional factors to explore in future research. Moreover, information on interpersonal relationships, number of pupils per class and students perceptions of the teacher may also help to advance the exploration of relationships between body image and motivation within physical education.

Through the focus group sessions it emerged that the participants appeared reluctant to talk about some of the issues posed to them. The study would have benefited from a more in depth exploration from a qualitative perspective. In retrospect, the nature of the topic probably warranted a period of familiarisation in which an element of trust was established between the researcher and the participants. The participants may have felt more compelled to explore some of the questions posed to them if they had established a greater level of familiarity and trust with myself. With this in mind, it is proposed that future research should incorporate more in depth qualitative analysis over a long period of time than in the current study.

Addressing the limitations identified in this thesis would further knowledge in this area with the aim of developing practical and pedagogical strategies. The next section will present to you future research directions that specifically focus upon developing general research of body image within physical education.

10.4 Future Research Directions

Although the previous section of this thesis presented to you how specific aspects of the study were limited and how they could be advanced in future research, this section will explore the general future directions of body image research within physical education. With this in mind, I suggest that this thesis provides a unique contribution to an existing body of primarily qualitative evidence concerned with the body within physical education, as acknowledged within the literature review section. Contemporary physical education research has begun to explore the social construction of the body and the subsequent implications for young people's engagement and/or resistance in physical education and physical activity within

and beyond the classroom (Evans & Davies, 2004; Evans, Rich, & Davies, 2004; Oliver, 1999; 2000; 2001; 2004, Oliver & Lalik, 2001; 2004; Kirk, 2002; Gorley et al., 2003). The fundamental impact that such thinking has had upon the understanding of the body within physical education is vast, yet I propose that researchers may be somewhat guilty of adopting a 'tunnel vision' approach and that in order for the field to further progress the understanding of the body the issue need to be further addressed from a multi-disciplinary, multi methods perspective. The fundamental basis of my argument is the study of the body is a complex interplay and interaction of the psychological and the social; a concept that this study has began to reveal. To address such a complex problem from a narrow perspective does not provide us with the best possible view. Exploring this issue from one dimension can only overlook its complexity and neglect the very important dynamics and perspectives that different disciplines can provide. Thus I feel that research in this field can only be forwarded when the boundaries between disciplines are erased. I feel that the study of the body is not one firmly rooted within a specific area. The fluid nature of the construct identified within the current study should be the foundations upon which we approach future research; fluid and dynamic and open to change. As a consequence I feel that future research should integrate psychological methods to answer questions such as how often? How much? And who? With the sociological questions of why? Fundamentally allowing us thereafter to crucially make change in the form of pedagogy, basing our practical strategies upon the entire picture and not just a perspective of ease or convenience.

With this in mind I propose that further research in this area would benefit from combining a number of the quantitative approaches utilised in the current study with an in depth qualitative exploration. I suggest that a particular focus on aspects of the media and wider physical culture, allowing pupils to explore why they place value on certain body types and the underpinning reasons for situational body image disturbance within physical education. For example, combining some of the in depth qualitative strategies conducted by Kimberly Oliver and colleagues (Oliver, 1999; Oliver, 2001; Oliver and Lalik, 2001; 2004) with some of the psychological data collection methods in the current study would

contribute further to existing research. Future research should focus on the impact that the media has upon pupils interpretations of their body within physical education and as identified in this study getting pupils to discuss this issue can be difficult, thus the use of visual stimulus and visual methodologies appears an appropriate avenue upon which to initiate future dialogues by providing powerful images as a way of stimulating and triggering psychological processes in order to identify socially constructed perceptions.

Chapter 11: Conclusions

This thesis draws to a conclusion, in a similar manner to in which it began. I will reflect upon my experiences of my own body, the experiences of bodies that are close to me and the experience of bodies that I have encountered during the process of completing my PhD. These reflections will occur in relation to the main findings of the thesis. I will also reconsider my standpoint on body image research and its significance within schools. I will finally begin to explore how the experiences of these bodies that I have formed some emotional connection to can be paralleled to the experiences of the bodies of the participants.

11.1 Reflections upon the significance of personal and situational factors

In the introduction I presented the experiences of my own body within physical education. At the time of writing I did not feel it was appropriate to explore the issues of my body beyond the school context as I did not think it was directly relevant to my thesis. However, when reflecting upon the literature presented in this thesis and the findings of the study, what is evident is that the body is not only a truly complex interplay of the individual and the environment but also the present at the past. The focus of this thesis was predominantly on factors concerned with the environment and the present, whilst touching upon components of the individual. What this thesis fails to fully encapsulate in the findings is the aspect of 'past' or as Cash (2002a) termed it the historical components, the biographical influences that shape us in the present. Reflecting upon the findings of the thesis I begin to consider the influence that the 'past' had upon my 'present' experiences of my body within physical education. I have only now begun to consider to what extent my experiences before physical education shaped how I felt about my body within the class.

Growing up as the youngest of six children, in a certain level of social deprivation, I have always been very much appreciative of the 'traditional' family home environment in which my body inhabited as a child and subsequently an adolescent. I have four older brothers and one older sister. My body inhabited a space at home which was very much dominated by traditional gender stereotypes; for example it was my sister and I who would clean the dishes after meals whilst

my male siblings disappeared into a haze of testosterone, football and engine oil. It was my sister and I who were pressured to perform and achieve in school, with my male siblings being encouraged to develop skills that would allow them to practice their masculinity. Alongside these deeply embedded gender stereotypes that underpinned the environment which my embodied self inhabited, were the comparisons between myself and my extremely slim, blonde, attractive, long limbed sister. My sister's looks very much aligned with society's perceptions of physical attractiveness, much to the delight of a home environment that was underpinned by these traditional notions of what was perceived to be acceptably feminine and acceptably masculine. Looking back I have fairly distinct memories of gatherings with extended family, whereby my sister and her conformations to western ideals of female attractiveness were firmly endorsed by Auntie Margaret and Great Aunt Dot.... 'Oh isn't she beautiful', 'She is so pretty'. Whilst at the same time my body inhabited a space next to hers, one in the shadows, in which I was overlooked because I didn't conform in the same way that she did. I have very distinct visual memories of several occasions in which my sister was obtaining praise for her physical attractiveness and I was stood physically next to her feeling dejected, worthless and unhappy because I did not possess the body and the looks that she did.

I think that maybe as a reaction to this I began to challenge the boundaries of what was acceptable in being an embodied female within my family home. I felt that the worth that was attached to my body as a female was minimal, and thus, if I wasn't good enough at being a female then I was going to try my hardest to be the best male I could. I began to play with boys' toys, I resisted any form of clothing that I thought would emphasise my femininity (or perceived lack of). Then came along sport, something which allowed me to further test the boundaries of femininity and masculinity then anything I had ever experienced before. There were particular kinds of activities that I resisted in my adolescent experience of physical education and sport; these were anything that involved me potentially displaying any characteristics that would have been deemed as feminine. Activities such as dance and gymnastics were definitely not things I wanted to be associated with. I had this underlying perception that my body was not suited to

such activities and as a result felt like I wouldn't be able to competently perform. I always felt that my adolescent body was more suited to the activities whereby power and aggression were the focus of performance. I was termed a 'geezer bird' by my male peers. This is Essex terminology for the phrase more commonly known as a 'Tomboy'¹². In my last year of school my physical education teacher wrote in my year book that 'You are the only ever person I have seen able to scare off the whole of year 11 boys when you pick up a hockey stick', reflecting the identity that I had established within physical education. I was happy with this name and identity that was given to me, as it was body identity that I lacked at home. Although I happily took on this identity at school, it was at home that frictions began to emerge regarding my participation in 'traditionally masculine' sports, with on several occasions my parents openly questioning my sexuality as a 13-14 year old girl, merely based upon the fact that I participated in football.

The findings of my thesis have allowed to reflect further than the physical education lesson, to begin to piece together how the history of my body prior to secondary school physical education could have potentially so deeply influenced the contextual experience of my body within the lesson itself. Every positive comment my sister received towards her body's endorsement of traditional notions of physical attractiveness had the potential consequence of casting my body into the shadows of the unacceptably feminine, which as a result influenced my experience of physical education and sport and also my body within this context. But, as the old saying goes 'there are two sides to every story' and if I now look at my sister and her current experience of her body I begin to see how potentially damaging her historical experiences of her body were. Although I looked on with awe at her and her body during childhood and adolescence, as an adult I now see the battles that she has with her body. Her battles to keep her body in a form consistent with traditional femininity, as so much of her self-worth must have been contingent on physical attractiveness. Only two weeks ago I was with her and her children at the dinner table, whilst my sister evaluated the calorie content of her meal. My niece responded to the scenario with the question of

¹² 'Tomboy' is the name given to females that display the expected characteristics (behaviour, dress etc) of males.

‘mummy why are you so concerned about these calorie things?’ And so it begins, another generation of children that will enter physical education classes with a deeply embedded history associated with their bodies.

How does this account of my biography of embodiment relate to the findings of my thesis ?. As the case put forth in the previous paragraphs strongly presents, my perceptions that my body in physical education was so deeply influenced by these past or historical events. Yet, what this reflection does is only confirm the findings of the thesis. The findings highlighted that the majority of the variance in body satisfaction scores can be attributed to factors operating at the pupil level, and the experiences presented in the previous paragraphs only go onto support this notion. Yet, the findings also suggest that context, which in this case was the physical education class, is significant in influencing an individual’s situational experience of their body, the reflections of which I addressed at the start of this thesis.

Taking these findings and reflections into consideration, the role that physical education plays in an adolescent’s experience of their body must be reconsidered. Yes, the findings suggest that the physical context is important in influencing experiences of the body and what more begins to explore the physical education classroom in relation to the body image construct in a manner not apparent in current research within the field. The promising findings provide evidence to suggest that there are potential strategies that could be implemented within physical education to reduce or alleviate situational body image concerns. However, while the results of the thesis do not provide any concrete strategies for how this could be achieved, it does allow for the consideration of the potential for physical education to act as a vehicle through which to ease broader body image concerns. Physical education is the only subject within school that explicitly addresses how different types of bodies can be assigned different value. It is the only subject within school that presents opportunities for overt displays of flesh; not just within the changing room but also into lessons such as swimming. Is it an ethical responsibility of physical education to be held accountable for such events that may trigger situational negative experiences of the body and any potential

after affects beyond the classroom? Should physical education be protecting against potentially damaging situational cues? The extent to which physical education is a unique classroom environment in which situational body image concerns are experienced within schools is currently unknown. It is currently not known if the level of situational disturbance in physical education is comparative to other lessons around the school and is the issue of educating children about their bodies and promoting a positive body image a wider school issue? Furthermore, if children are entering the school gates with preconceived ideas from the media and family environments about what their bodies should look like to be socially acceptable is must be considered the extent to which physical education or even schools can influence or impact an adolescents body image? In this regard, is it an unrealistic aspiration to suggest that physical education should be educating children about the values of their bodies? Is it equally as unrealistic as the role that is placed upon physical education to aspire to lifelong physical activity? Both aspirations appear to hold physical education accountable for wider issues. Yet, I suggest that physical education does have an important role to play in this process. Making adolescents feel good about how their bodies move and encouraging feelings of physical competence, is, I suggest an important starting point and supported by this research. The extent to which accountability lies entirely with physical education is questionable and should be addressed once a broader picture of the issue is developed through future research.

11.2 Links between the findings and the bodies around me

The previous section of this conclusion presented a reflection of the overall findings of the thesis in relation to my personal biographical narrative and the potential significance of physical education in enhancing body image concerns. This final section will draw together all of the bodies that have informed my reflections to establish real life connections with the data obtained.

The 5 year old girl

Reflecting back once again to the introduction section, I presented my experience of the 5 year old girl that had already established links between her food consumption, body weight and her peer's perceptions of her body. I posed some

tentative questions which began my exploration of this area. If this child was experiencing issues concerning her body at such a young age how were these thoughts and feelings likely to transpire in her adolescent years; how is she going to feel about her body during this difficult time of maturation? How will her feelings towards her body influence her behaviours? And how can the environments in which she engages in either alleviate or foster such concerns? Although these were not direct research questions, this child is one that fuelled my desire to investigate issues surrounding body image and through the research conducted I now have the potential to draw some conclusions about what this young girl may experience during her adolescent years. Upon writing this final section of the thesis this 5 year old girl is now nearly 10, thus, approaching the adolescent years. The results of the thesis suggest that in approximately 3 years time she is likely to experience dissatisfaction with her body, as did most of the participants in this study. She is likely to want to possess a thinner body than the one which she will have, as was the case for the majority of the female participants. If her body dissatisfaction remains high she is likely to not feel competent within physical education and as a result possibly possess a lack of motivation to engage with the subject and sporting activities outside of school. These assumptions are all based upon the notion that the level of value attributed to physical attractiveness will remain high and static, but it is likely that as technology advances and access to potentially damaging media messages associated with physical attractiveness becomes more accessible and subconscious, thus, it is likely that when this 5 year old reaches her adolescent years the problems may have escalated

My 9 year old son

I could also use the findings of my study to make projections about my son's potential experiences of his body in 4 years time when he reaches 13. He is likely to also be dissatisfied with his current body size, but unlike the female we cannot establish with as much certainty if this is because he will be concerned about being 'fat' or because he will be concerned that he lacks muscularity. He is likely to feel more competent in physical education than his female peers and is also

likely to have higher levels of autonomous motivation and a greater perception that physical education stimulates him to engage in sports activities outside of school.

These brief examples highlight how my results could be translated into a real life example of the sex differences in these variables that were presented in the thesis. On a much more personal level I am aware of my son's current relationship with physical education, and thus far his experiences of physical education I believe are underpinned by his perceived lack of competence that have arisen as a result of negative experiences that have sought to confirm his perceptions are correct. The findings of the study suggest that this may have negative implications for his motivation towards physical education and potential physical activity beyond the school day.

Much of the literature presented at the start of this thesis highlight how body image research has historically focused upon female populations and although an emerging body of literature has begun to explore issues of body image in males, this still appears a relatively neglected area. The findings of the research in relation to the prevalence of body dissatisfaction in males highlight the importance of future research that explores body image in both males and females.

Myself

I never really considered my relationship with my body to be 'disturbed', but one thing that has emerged through the conduction of this research and my personal reflections of the findings is that this is something that I should possibly begin to accept. If I parallel the findings of the study to my 13 year old self, it is more than likely that I would have been one of those participants that were highly dissatisfied within my body size. I can with all certainty say that I would have been one of the % of female participants that desired a smaller body size. However, as is evident from my reflections of my body within physical education I had a high level of perceived competence but this was only true of activities in which I felt that my perceived masculine physical attributes were more suited.

The findings of the thesis suggest that those that were more dissatisfied with their bodies were more likely to perceive themselves as physically incompetent, but my personal reflections suggest that the relationship may not be as clear cut as that. The results of my thesis may imply one of two things; I may merely be an anomaly in the findings and do not fit the observed relationships, or the relationship needs further exploration to try and unpick notions of masculinity, femininity, lesson content and body image, in line with my own personal reflections. Future research could potentially focus on addressing the notions of masculinity and femininity, in relation to body image, perceived competence and lesson content. This would expand upon the work of Kimberly Oliver and colleagues (2001,2004). by explicitly exploring the construct of body image in relation to these concepts.

The very fact that I had these struggles with my body as an adolescent, yet had such a positive experience of physical education and sport beyond the school day go against all of the findings of my thesis. With dissatisfaction towards my body, I would have been expected to lack motivation towards physical education, but that wasn't the case. I was very autonomously motivated in physical education and would have most certainly have reported that physical education stimulated me to engage in sports activities outside of school. These inconsistencies between my personal experience of physical education and the findings of the study fuel my desire to explore this research topic further. At the start of this thesis I pondered to what extent my experiences of physical education in relation to my body image were unique. Ironically as the thesis draws to an end I am still asking myself the same question. Am I really just an anomaly?

11.3 Final Remarks

The final section of this conclusion is an overall reflection of the significance of the study of the body within the school context and more specifically physical education. This thesis presents a number of unique contributions to knowledge within the area of general body image research and physical education research. One of the key findings that informs my reflections of the importance of this topic as an area that requires further research attention is the finding that the physical

education classroom is important in influencing an adolescents situational experience of their body. This can then be put into the context of the potential behavioural, cognitive and affective outcomes associated with a disturbed body. Thus, allowing me to adopt a firm standpoint that issues associated with the psychology of the body should not go overlooked in research, the media and in schools. We are constantly presented with research within schools exploring aspects of the obese body and the physical manifestations associated with body weight, yet this thesis has began to identify some of the associations linked to the psychological manifestations of body weight and physical appearance within schools. In conclusion, the findings of this thesis calls for a re-evaluation of the current pre-occupation in research in schools that addresses the physical aspects of body weight to an exploration of the psychological outcomes associated with physical appearance and the wider media culture.

APPENDICIES

APPENDIX A: Demographic Information

Name :.....

Age :.....

Postcode:

Class :.....

Sex: Male Female (Circle as appropriate)

What activity are you currently doing in P.E:.....

Is your current P.E teacher: Male Female (Circle as appropriate)

To which of these groups do you consider you belong? (Please tick as appropriate)

White	British	
	Any other White background (Please describe)	
Mixed	White and Black Caribbean	
	White and Black African	
	White and Asian	
	Any other Mixed background (Please describe)	
Asian or Asian British	Indian	
	Pakistani	
	Bangladeshi	
	Any other Asian background	
Black or Black British	Caribbean	
	African	
	Any other Black background	
Chinese or other ethnic group	Chinese	
	Any other (Please describe)	

APPENDIX B: Transfer of Learning Question

Physical education classes stimulate me to also engage in sport activities outside school (Please circle as appropriate).

0	1	2	3	4
Not true for me			Totally true for me	

APPENDIX C: Behavioural Regulation in Physical Education Questionnaire (BRPEQ- Aelterman et al., 2012).

Please respond to the following questions about why you put effort into physical education (P.E)

	I put effort in physical education class ...	Not true for me	Rather not true for me	Sometimes true, sometimes not true for me	Rather true for me	Very true for me
1	... because I feel guilty if I don't	1	2	3	4	5
2	... because I value the benefits of this PE class	1	2	3	4	5
3	... because this PE class is fun	1	2	3	4	5
4	I don't see why this PE class is part of the curriculum.	1	2	3	4	5
5	... because it is personally important to me	1	2	3	4	5
6	I don't see why I should bother participating in this PE class	1	2	3	4	5
7	... because I enjoy this PE class	1	2	3	4	5
8	... because it is the only way to please others	1	2	3	4	5
9	I don't see the point of this PE class.	1	2	3	4	5
10	... because I feel like a failure if I don't	1	2	3	4	5
11	... because I find this PE class personally meaningful	1	2	3	4	5
12	... because I find this PE class a pleasurable activity	1	2	3	4	5
13	... because I feel under pressure from others to participate	1	2	3	4	5
14	... because I get pleasure and satisfaction from participating in PE class	1	2	3	4	5
15	I think this PE class is actually a waste of time.	1	2	3	4	5
16	... because I have to prove myself	1	2	3	4	5
17	... because I fully recognize the usefulness of this course	1	2	3	4	5
18	... because I otherwise get criticized	1	2	3	4	5
19	... because others will appreciate me less	1	2	3	4	5
20	... because it is the only way to be proud of myself	1	2	3	4	5

APPENDIX D: Adapted version of the Body Image States Scale (BISS) (Cash *et al.*, 2002)

Please respond to the questions using the scale ranging from 1 to 9 that best describes how you felt **DURING YOUR CURRENT ACTIVITY IN PHYSICAL EDUCATION** (for example dance, athletics etc.). Please respond to the items below as honestly as possible.

	During your current activity within physical education....	Extremely dissatisfied	Mostly dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither dissatisfied nor satisfied	Slightly satisfied	Moderately satisfied	Mostly satisfied	Extremely satisfied
1	...how satisfied are you with your physical appearance?	1	2	3	4	5	6	7	8	9

	During your current activity within physical education....	Extremely satisfied	Mostly satisfied	Moderately satisfied	Slightly satisfied	Neither dissatisfied nor satisfied	Slightly dissatisfied	Moderately dissatisfied	Mostly dissatisfied	Extremely dissatisfied
2	... how satisfied are you with your body size and shape?	1	2	3	4	5	6	7	8	9

	During your current activity within physical education....	Extremely dissatisfied	Mostly dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither dissatisfied nor satisfied	Slightly satisfied	Moderately satisfied	Mostly satisfied	Extremely satisfied
3	... how do you feel about your weight?	1	2	3	4	5	6	7	8	9

	During your current activity within physical education....	Extremely physically attractive	Very physically attractive	Moderately physically attractive	Slightly physically attractive	Neither attractive nor unattractive	Slightly physically unattractive	Moderately physically unattractive	Very physically unattractive	Extremely physically unattractive
4	...how attractive do you feel?	1	2	3	4	5	6	7	8	9

	During your current activity within physical education....	A great deal worse	Much worse	Somewhat worse	Just slightly worse	About the same	Just slightly better	Somewhat better	Much better	A great deal better
5	...how do you feel about your looks compared to how you usually feel?	1	2	3	4	5	6	7	8	9

	During your current activity within physical education....	A great deal better	Much better	Somewhat better	Just slightly better	About the same	Just slightly worse	Somewhat worse	Much worse	A great deal worse
6	...how do you feel about your looks in comparison to the average person?	1	2	3	4	5	6	7	8	9

APPENDIX E: The perceived competence subscale of the Intrinsic Motivation Inventory.

(McAuley, Duncan and Tammen, 1989)

For each of the following statements, please indicate how true it is for you during you **current activity in physical education** (P.E), using the following scale:

1	2	3	4	5	6	7
not at all true		somewhat true			very true	

Perceived Competence

I think I am pretty good at this activity.

I think I did pretty well at this activity, compared to other students

This was an activity that I couldn't do very well.

After working at this activity for awhile, I felt pretty competent.

I am satisfied with my performance at this task.

I was pretty skilled at this activity

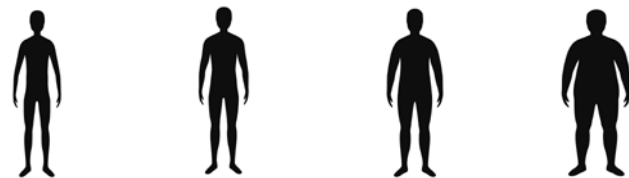
APPENDIX F: The BMI-based Silhouette Matching Test (BMI-SMT, Peterson *et al.*, 2003; 2004).

Place an “x” in the box that best reflects your current appearance.

Females:

[illegible]

Males:

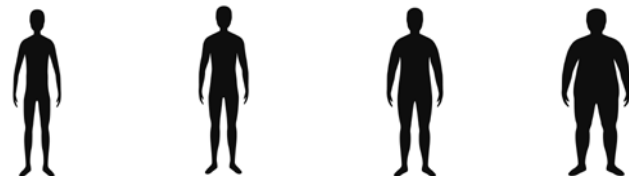
[illegible]

Place an “x” in the box that reflects the appearance you would most want to look like.

Females:

[illegible]

Males:

[illegible]

APPENDIX G: Focus Group Guiding Questions

Intro questions

- 1. Do you enjoy physical education?** (*probe: what do you enjoy and why?, competence, motivation*)
- 2. How often do you do physical education?**
- 3. What is your favourite activity in physical education?** (*probe: why, where*)

Section 1: Body Image in physical education

- 4. When in a physical education lesson how do you feel about your body?**
(*probe: comfortable/uncomfortable/ satisfied/unsatisfied. Concerns regarding aesthetic or functional body image*)
- 5. Are there certain things within physical education that may make you feel more or less comfortable with your body/ What factors within physical education might influence how you feel about your bodies?**
(*probe: peers, teachers, changing rooms, clothing. Co-ed lessons*).
- 6. (If yes) how do they influence you?** (*probe: specifics of the influence, what do you like/dislike about the clothing, changing rooms etc.*)
- 7. Do certain activities make you more conscious of your body than other activities?**
(*probe: swimming, fitness, gymnastics.*)
- 8. (If yes) why do you think you feel more/less uncomfortable in these activities?**
(*probe: competence, clothing, body type*)
- 9. If someone is competent/successful in physical education, what are their main qualities?** (*probe: how important are the functional/aesthetic components of BI in an individual's interpretation of a 'good' physical education student, what value does the body hold, what qualities of the body have value. Differences between boys and girls*)

Section 2: Outside of school

- 10. Do you participate in any sports/exercise/physical activity outside of school?** (*Probe: What, where, level, frequency, with whom*)
- 11. If yes, do you feel more comfortable/satisfied with your body in physical activity outside of school compared to when you are in physical education?** (*probe: why? – location, clothing, context, peers*).
- 12. If no, does how you feel about your body prevent you from participating in activities outside of school?**

REFERENCES

- Abbott, B.D., and Barber, B.L. (2010). Embodied image: Gender differences in functional and aesthetic body image among adolescents. *Body Image*, 7, 22-31.
- Adamo, K.B., Prince, S.A., Tricco, A.C., Connor-Gorber, S., and Tremblay, M. (2009). A comparison of indirect versus direct measures for assessing physical activity in the pediatric population: A systematic review. *International Journal of Pediatric Obesity*, 4, 2-27.
- Aelterman, N., Vansteenkiste, M., Van Keer, H., Van den Berge, L., De Meyer, J., and Haerens, L. (2012). Students' objectively measured physical activity levels and engagement as a function of between-class and between-student differences in motivation toward physical education. *Journal of Sport and Exercise Psychology*, 34 (4), 457-480.
- Allender, S., Cowburn, G., and Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: a review of qualitative studies. *Health Education Research*, 21 (6), 826-835.
- Allender, S., Foster, C., Scarborough, P., and Rayner, M. (2007). The burden of physical activity related ill health in the UK. *Journal of Epidemiology and Community Health*, 61, 344-348.
- Amorose, A. J. (2001). Intraindividual variability of self-evaluations in the physical domain: Prevalence, consequences, and antecedents. *Journal of Sport & Exercise Psychology*, 23, 222-244.
- Batteby, L., Sandhagen, b., Fan, H., and Samuelson, G. (1997). A 7 day physical activity diary for assessment of daily energy expenditure validated by the doubly labelled water method in adolescents. *European Journal of Clinical Nutrition*, 51, 585-591.

- Baumeister, R.F., & Leary, M.R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Baquet, G., Stratton, G., Van Praagh, E., Berthoin, S. (2007). Improving physical activity assessment in prepubertal children with high-frequency accelerometry monitoring: a methodological issue. *Preventative Medicine*, 44, 143-147.
- Bevans, K., Fitzpatrick, L.A., Sanchez, B., and Forrest, C.B. (2010). Individual and instructional determinants of student engagement in physical education. *Journal of Teaching in Physical Education*, 29, 399-416.
- Blair, S.N., Clark, D.G., Cureton, K.J. and Powell, K.E. (1989). Exercise and fitness in childhood: implications for a lifetime of health. In *Perspectives in Exercise Science and Sports Medicine, Vol. 2: Youth, Exercise and Sport* (edited by C.V. Gisolfi and D.R. Lamb), pp. 401- 430. New York: McGraw-Hill.
- Boiche, J.C.S., Sarrazin, P.G., Grouzet, F.M.E., Pelletier, L.G., and Chanal, J.P. (2008). Students motivational profiles and achievement outcomes in physical education: A Self Determination Theory perspective. *Journal of Educational Psychology*, 100, 688-701.
- Boreham, C., and Riddoch, C. (2001). The physical activity, health and fitness of children. *Journal of Sports Sciences*, 19 (12), 915-929.
- Bridger, T. (2009). Childhood obesity and cardiovascular disease. *Paediatrics and Child Health*, 14 (3), 177-182.
- Brinded, P.M., Bushnell, J.A., McKenzie, J.M., and Wells, J.E. (1990). Body-image distortion revisited. Temporal instability of body image distortion in anorexia nervosa. *International Journal of Eating Disorders*, 9, 695-701.
- British Medical Association (2003). Adolescent Health. Board of Science and Education (bma.org.uk Accessed Nov 2011).
- Brownwell, K., Rodin, J., and Wilmore, J.H. (1992). Eating, body weight and performance in athletes: An introduction. In K.D. Brownwell, J.Rodin and J.H.

Wilmore (Eds). *Eating, body weight and performance in athletes. (p3-14)*
Malvern PA: Lea and Febiger.

Brunet, J. & Sabiston, C. M. (2009). Examining the relationship between social physique anxiety and physical activity: a self-determination perspective. *Psychology of Sport & Exercise, 10*, 329-335.

Burgess, G.R., Grogan, S., and Burwitz, L. (2006). Effect of a 6-week aerobic dance intervention on body image and physical self perceptions in adolescent girls. *Body Image, 3*, 57-66.

Bryan, C.L., and Solomon, M.A. (2007). Self Determination Theory and engagement in Physical Education: A structural equation modeling approach. *Research Quarterly for Exercise and Sport, 78*, A-51.

Byrne, S., & McLean, N. (2001). Eating disorders in athletes: A review of the literature. *Journal of Science and Medicine in Sport, 4*(2), 145-159.

Cairney, J., Kwan, M.Y.M., Veldhuizen, S., Hay, J., Bray, S.R., and Faught, B.E. (2012). Gender, perceived competence and the enjoyment of physical education in children: a longitudinal examination. *International Journal of Behavioural Nutrition and Physical Activity, 9*, 26.

Cale, L. (1993). *The four by one-day physical activity recall questionnaire protocol and instruction manual*. Loughborough: Loughborough University.

Cale, L., and Harris, J. (2006). School based physical activity interventions: effectiveness, trends, issues and implications and recommendations for practice. *Sport, Education and Society, 11* (4), 401-42.

Calogero, R.M. (2004). A test of objectification theory: The effect of the male gaze on appearance concerns in women. *Psychology of Women Quarterly, 28* (1), 16-21.

Campbell, A.M., and Hausenblas, H.A. (2009). Effects of exercise interventions on body image. *Journal of Health Psychology, 14* (6), 780-793.

- Carroll, B., and Loumidis, J. (2001). Children's perceived competence and enjoyment in physical education and physical activity outside school. *European Physical Education Review*, 7 (1), 24-43.
- Cash, T.F. (2002a). 'Cognitive-behavioral perspectives on body image' in Cash, T.F., and Pruzinsky, T. (eds) *Body Image: A handbook of theory, research and clinical practice*. Guilford: New York, pp.38-46.
- Cash, T.F. (2002b). A 'Negative body image' : Evaluating epidemiological evidence. in Cash, T.F., and Pruzinsky, T. (eds) *Body Image: A handbook of theory, research and clinical practice*. Guilford: New York, pp.38-46.
- Cash, T.F., Fleming, E.C., Alindogan, J., Steadman, L., and Whitehead, A. (2002). Beyond Body Image as a Trait: The Development and Validation of the Body Image States Scale. *Eating Disorders: The Journal of Treatment and Prevention*, 10 (2), 103-113.
- Cash, T.F., & Pruzinsky, T. (2002). Future challenges for body image theory, research, and clinical, practice. In T.F. Cash & T. Pruzinsky (Eds.), *Body Images: A Handbook of Theory, Research, and Clinical Practice* (pp. 509-516). New York: Guilford Press.
- Casperson, C.J., Powell, K.E., Christenson, G.M. (1985). Physical activity, exercise and physical fitness. *Public Health Reports*, 100 (2), 126-131.
- Chatzisarantis, N.L.D. and Hagger, M.S. (2009) 'Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation', *Psychology and Health* 24, 29-48.
- Chinapawm M.J., Mokkink, L.B., Van Poppel, M.N., Van Mechelen, W., and Terwee, C.B. (2010). Physical activity questionnaires for youth: A systematic review of measurement properties. *Sports Medicine*, 40 (7), 539-563.
- Cliff, K. P. and Wright, J. (2010) Confusing and contradictory: considering obesity discourse and eating disorders as they shape body pedagogies in HPE. *Sport, Education and Society*, 15(2), 221-233.

Cohane, G.H., and Pope, H.G. (2001). Body Image in boys: a review of literature. *International Journal of Eating Disorders*, 29 (4), 373-379.

Cohen, L, Manion, L. and Morrison, K. (2000) *Research Methods in Education*.. London: Routledge/Falmer

Corder, K., Ekelund, U., Steele, R.M., Wareham, N.J., and Brage, S. (2008). Assessment of physical activity in youth. *Journal of Applied Physiology*, 105, 977-987.

Cox, A.E., Williams, L., and Smith, A.L. (2007). Motivation in physical education and physical activity outside of school. *Journal of Sport and Exercise Psychology*, 29, S154-S155.

Cox, A.E., Smith, A.L., and Williams, L. (2008). Change in physical education motivation and physical activity behavior during middle school. *Journal of Adolescent Health*, 43, 506-513.

Cox, A.E., and Williams, L. (2008). The roles of perceived teacher support, motivational climate and psychological need satisfaction in students physical education motivation. *Journal of Sport and Exercise Psychology*, 30, 222-239.

Crissey, S.R., And Crissey Honea, J. (2006). The relationship between athletic participation and perceptions of body size and weight control in adolescent girls: The role of sport type. *Sociology of Sport Journal*, 23, 248-272.

Crocker, P.R.E., Sabiston, C.M., Kowalski, K.C., McDonough, M.H., and Kowalski, N. (2006). Longitudinal assessment of the relationship between physical self-concept and health related behaviour and emotion in adolescent girls. *Journal of Applied Sport Psychology*, 18, 185-200.

Davison, K.K., Earnest, M.B., and Birch, L.L. (2002). Participation in aesthetic sports and girls' weight concerns at ages 5 and 7 years. *International Journal of Eating Disorders*, 31, 312-317.

Davies, C. (1997). 'Body Image, Exercise and Eating Behaviours', in Fox, K.R. (eds.) *The Physical Self*, pp. 143-74. Champaign, IL: Human Kinetics.

- De Bruin, A.P., Oudejans, R.R.D., and Bakker, F.C. (2007) Dieting and body image in aesthetic sports: a comparison of dutch females gymnasts and non-aesthetic sport participants. *Psychology of Sport and Exercise*, 8, 507-520.
- deCharms, R. (1976). *Enhancing motivation: Change in the classroom*. New York: Irvington.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18,105-115.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Academic Press.
- Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology*,40,1-10.
- Deci, E. L., & Ryan, R. M. (1985a). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1985b). The general causality scale: Self-determination in personality. *Journal of Research in Personality*, 19,109-134.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration inpersonality. In R. A. Dienstbier (Ed.), *Nebraska symposium on motivation: Perspectives on motivation* (Vol. 38, pp. 237-288). Lincoln, NE: University of Nebraska.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11 (4), 227-268.
- Deci, E. L., & Ryan, R. M. (Eds.) (2002). *Handbook on self-determination research: Theoretical and applied issues*. Rochester, NY: University of Rochester Press.
- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology*, 49, 14–23.

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *The Educational Psychologist*, 26, 325-346.

Department of Health (2004) At least five a week - evidence on the impact of physical activity and its relationship to health - a report from the Chief Medical Officer. <https://www.gov.uk/government/publications> accessed July 2011

Department of Health (2005). Choosing Activity: A physical activity action plan. <https://www.gov.uk/government/publications>

Department of Health (2008). Healthy weight, healthy lives: A cross government strategy for England. <https://www.gov.uk/government/publications> accessed July 2011

Department of Health (2009). Health Survey for England 2008 <https://www.gov.uk/government/publications> accessed July 2011

Department for Communities and Local Government. The English Indices of deprivation 2007 (2008). Wetherby, UK, Communities and Local Government Publications.

Douhitt, V.L. (1994) Psychological determinants of adolescent exercise adherence. *Adolescence*, 29, 711-722.

Duncan, M. J., Woodfield, L. A., O'Neill, S. J. and Al-Nakeeb, Y. (2002) 'Relationship between body image and percent body fat among British school children', *Perceptual and Motor Skills*, 94, 197-203.

Duncan, M.J., and Al-Nakeeb, Y., Nevill, A., and Jones, M.V. (2004). Body image and physical activity and British secondary school children. *European Physical Education Review*, 10 (3), 243-260.

Duncan, M. J., Al-Nakeeb, Y., Woodfield, L. and Nevill, A. (2009) 'Body esteem in British children: Differences due to weight status, ethnicity and gender', *International Public Health Journal*, 1, 173-178.

- Dupont, J.P., Carlier, G., Gerard, P., and Delens, C. (2009). Teacher student negotiations and its relation to physical education students' motivational processes: An approach based upon Self Determination Theory. *European Physical Education Review*, 15, 21-46.
- Dwyer, J.J.M., Allison, K.R., Goldenberg, E.R., Fein, A.J., Yoshida, K.K., and Boutilier, M.A. (2006). Adolescent girls' perceived barriers to participation in physical activity. *Adolescence*, 41 (161).
- Ebbeck, V., & Stuart, M.E. (1993). Who determines what's important?: Perceived competence, individual importance, and group importance as determinants of self-esteem. *Pediatric Exercise Science*, 5, 253-262.
- Eston, R.G., Rowlands, A.V., Ingledew, D.K. (1998). Validation of heart rate, pedometry and accelerometry for predicting the energy cost of children's activities. *Journal of Applied Physiology*, 84, 362-371.
- Evan, J. and Davies, B. (2004). The embodiment of consciousness: Berstein, health and schooling. In J. Evans, B. Davies and J. Wright (Eds.). *Body, knowledge and control*. London: Routledge. (pp207-218).
- Evans, J, Rich, EJ, Davies, B (2004) The Emperor's New Clothes: Fat, Thin and Overweight. The Social Fabrication of Risk and Ill-Health, *Journal of Teaching in Physical Education*, 23(4),372-392.
- Evans, J., Rich, E., Davies, B. and Allwood, R., 2008. Education, disordered eating and obesity discourse: fat fabrications. Abingdon: Routledge.
- Evans, J and Davies, B (2010) Family, Class and Embodiment: Why School Physical Education makes so little difference to post school participation patterns in physical activity, *International Journal of Qualitative Studies in Education*, 23(7),765-784.
- Fairclough, S.J, Stratton, G. and Baldwin, G. (2002) „The contribution of secondary school physical education to lifetime physical activity." *European Physical Education Review*, 8(2): 69-84.

- Farrell, C., and Lee, M., and Shafran, R. (2005). Assessment of body size estimation: A review. *European Eating Disorders Review*, 13 (2), 75-88.
- Ferrand, C., Magnan, C., Phillippe, R.A. (2005). Body esteem, body mass index and risk factors for disordered eating among adolescents in synchronised swimming. *Perceptual and Motor Skills*, 101 (3) , 877-884.
- Fenandez-Aranda, F., Dahme, B., and Meerman,R. (1999). Body image in eating disorders and analysis of its relevance: A preliminary study. *Journal of psychosomatic research*, 47 (5), 419-428.
- Ferrer-Caja, E., and Weiss, M.R. (2000). Predictors to intrinsic motivation among adolescent students in physical education. *Research Quarterly for Exercise and Sport*, 71, 267-279.
- Flintoff, A., and Scraton, S. (2001). Stepping into active leisure? Young women's perceptions of active lifestyles and their experiences of school physical education. *Sport, Education and Society*, 6 (1), 5-21.
- Foucault, M. (1975). *Discipline and Punish: the Birth of the Prison*, New York: Random House.
- Franko, D.L. & Striegel-Moore, R.H. (2002). The role of body dissatisfaction as a risk factor for depression in adolescent girls: Are the differences black and white? *Journal of Psychosomatic Research*, 53, 1-9.
- Furnham, A., and Calman, A. (1998). Eating disturbance, self esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *European Eating Disorders Review*, 6, 58-72.
- Furnham, A., Titman, P., and Sleeman, E. (1994). Perceptions of female body shapes as a function of Exercise. *Journal of Social Behaviour and Personality*, 9, 335-352.

Gagné, M., Ryan, R. M., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15(4), 372–390.

Gardner, R.M. (2002). 'Body image assessment of children' in Cash, T.F., and Pruzinsky, T. (eds) *Body Image: A handbook of theory, research and clinical practice*. Guilford: New York, pp.127-134.

Gillison, F.B., Standage, M., & Skevington, S.M. (2011). Motivation and body-related factors as discriminators of change in adolescents' exercise behavior profiles. *Journal of Adolescent Health*, 48, 44-51.

Gleeson, K., and Frith, H. (2006) (De)constructing Body Image. *Journal of Health Psychology*, 11 (1), 79-90.

Goodburn, E.A., and Ross, D.A. A Picture of health? : a review and annotated bibliography of the health of young people in developing countries. WHO, Geneva, 1995.

Gorely, T., Holroyd, R. & Kirk, D. (2003) Muscularity, the habitus and the social construction of gender: Towards a gender relevant physical education. *British Journal of Sociology of Education* 24 (4), 429-448.

Greenleaf, C., Boyer, E. M., & Petrie, T. A. (2009). Psychological well-being and physical activity: The role of high school physical activity and sport participation. *Sex Roles*, 61, 714-726

Grimstone, S.K., Willows, N.D., Hanley, D.A. (1993). Mechanical loading regime and its relationship to bone mineral density in children. *Medicine and Science in Sports and Exercise*, 25, 1203-1210.

Grogan (1999). *Body image?: Understanding body dissatisfaction in men, women and children*. London: Routledge.

Grogan (2006). Body image and health: contemporary perspectives. *Journal of Health Psychology*, 11, 523-530.

Guthold, R., Cowan, M., Autenrieth, C., Kann, L., and Riley, L. (2010). Physical activity and sedentary behavior among schoolchildren: a 34-country comparison. *Journal of Pediatrics*, 157, 43-49.

Hagger, M.S., Chatzisarantis, N.L.D., Culverhouse, T., and Biddle, S.J.H. (2003). The process by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A Trans-Contextual Model. *Journal of Educational Psychology*, 95, 784-795.

Hagger, M.S., Chatzisarantis, N.L.D., Barkoukis, V., Wang, C.K.J., and Baranowski, J. (2005). Perceived autonomy support in physical education and leisure time physical activity: A cross cultural evaluation of the Trans-Contextual model of motivation in four nations. *Psychology and Health*, 24, 689-711.

Haerens, L., Kirk, D., Cardon, G., De Bourdeaudhuij, I., Vansteenkiste, M. (2010) The quality and quantity of motivation for secondary school physical education and its relationship to the adoption of a physically active lifestyle among university students. *European Physical Education Review*, 16(2), 117–139.

Haerens, L., Aelterman, N., Van den Berge, L., De Meyer, J., Soenens, B., Vansteenskiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport and Exercise Psychology*, 35 (1), 3-17.

Hein, V., Murr, M., Koka, A. (2004). Intention to be physically active after school graduation and it's relationship to three types of intrinsic motivation. *European Physical Education Review*, 10, 5-9.

Hein, V., and Hagger, M.S. (2007). Global self esteem, goal achievement orientations and self determined behavioural regulations in a physical education setting. *Journal of Sports Sciences*, 25, 149-159.

Heinberg, L.J., Thompson, J.K., and Matzon, J.L. Body dissatisfaction as a motivator for healthy lifestyle change: is some distress beneficial? In: Striegel-Moore, R.H., Smolak, L. eds. *Eating disorders innovative directions in research*

and practice. Washington DC: American Psychological Association, 2001: 215-232.

Henry, R.N., Anshel, M.H., and Michael, T. (2006). Effects of aerobic and circuit training on fitness and body image among women. *Journal of Sport Behavior*, 29 (4), 281-303.

Holsen, I., Kraft, P., and Roysamb, E. (2001). The relationship between body image and depressed mood in adolescence: A 5-year longitudinal panel study. *Journal of Health Psychology*, 6, 613.

Howson, A. (2004). *The body in Society: An Introduction*. Polity: Cambridge.

Ingledeu, D.K. & Markland, D. (2008). The role of motives in exercise participation. *Psychology and Health*, 23, 807-828

Jaakkola, T., Liukkonen, J., Laakso, T., and Ommundsen, Y. (2008). The relationship between situational and contextual self determined motivation and physical activity intensity as measured by heart rates during ninth grade students physical education classes. *European Physical Education Review*, 14, 13-31.

James, K. (2000). 'You can *feel* them looking at you': The exposure of adolescent girls at swimming pools. *Journal of Leisure Research*. 32 (2), 262-280/.

Jeon, C.Y., Lokken, P., Hu, F.B., and Van Dam, R. M. (2007). Physical activity of moderate intensity and risk of type 2 diabetes. *Diabetes Care*, 30 (3), 744-752.

Johnson, B., and Christensen, L. (2012). *Educational research: Quantitative, qualitative and mixed approaches*. 4th Ed. Sage: CA.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133

- Jones, L. R., Fries, E., & Danish, S. (2007). Gender and ethnic differences in body image and opposite sex figure preferences of rural adolescents, *Body Image*, 4, 103-108.
- Katzamarzyk, P.T., and Davies, C. (2001). Thinness and body shape of playboy centrefolds from 1979-1998. *International Journal of Obesity and Related metabolic disorders*, 25, 590-592.
- Kirk, D. (2002). 'The Social Construction of the Body in Physical Education and Sport'. In Laker, A. (eds) *The Sociology of Physical Education and Sport: An Introductory Reader*. Pp 79-91, London: Taylor and Francis.
- Koka, A., and Hein, V. (2005). The effect of perceived teacher feedback on intrinsic motivation in physical education. *Journal of Sport Psychology*, 36, 91-106.
- Kostanski, M., & Gullone, E. (1998). Adolescent body image dissatisfaction: relationships with self- esteem, anxiety, and depression controlling for body mass. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39(2), 255-262.
- Krane, V., Stiles-Shipley, J.A., Waldron, J., Michalenok, J. (2001). Relationships among body satisfaction, social physique anxiety and eating behaviours in female athletes and exercisers. *Journal of Sport Behaviour*, 24, 247-264.
- Krueger, R.A., and Casey, M.A. (2000) *Focus Groups: A practical guide for applied research*. 3rd Ed. Sage: CA.
- Legenbauer, T., Vocks, S. & Rühl, I. (2008). Influence of appearance related TV commercials on body image state. *Behavior Modification*, 32, 352-371.
- Leon, G.R., Fulkerson, J.A., Perry, C.L., and Cudeck, R. (1993). Personality and behavioral vulnerabilities associated with risk status for eating disorders in adolescent girls. *Journal of Abnormal Psychology*, 102, 438-444.
- Levine, M.P., and Piran, N. (2004). The role of body image in the prevention of eating disorders. *Body Image*, 1(1), 57-70.

- Levine, M.P., and Smolak, L. (2002). 'Body Image Development in Adolescence', In Cash, T.F. and Pruzinsky, T. (eds.) *Body Image: A handbook of theory research and clinical practice*, PP74-82. Guilford: New York.
- Lewis, A. (1992) Group child interviews a research tool. *British Education Research Journal*, 18 (4), 413-421.
- Li, S., Truth, M.S., Wang, Y. (2010). How active are American adolescents and have they become less active? *Obesity Research*, 11, 847-862.
- Lim, B.S.C., and Wang, C.K.J. (2009). Perceived autonomy support, behavioral regulations in physical education and physical activity intention. *Psychology of Sport and Exercise*, 10, 52-60.
- Lonsdale, C., Sabiston, C., Raedeke, T., Ha, S. and Sum, K. (2009), 'Self-determined motivation and students' physical activity in physical education classes and free-choice periods', *Preventive Medicine*, 48 (1), 69-73.
- Luke, M.D., and Sinclair, G.D. (1991). Gender differences in adolescents' attitudes towards school physical education. *Journal of Teaching in Physical Education*, 11, 31-46.
- Lyu, M.J. and Pyo, N.S. (2005). Physical self-concept of college students. *Korean Journal of Sport Psychology*, 16(1), 97-110.
- Makri-Botsari, E. (2009). Dissatisfaction with body image, eating behaviour and self esteem in adolescence. *Psychology: The Journal of the Hellenic Psychological Society*, 16 (1), 60-76.
- Macaulay, C. (2000) 'Transfer of Learning' in Cree, V.E. and Macaulay, C. (eds.) *Transfer of Learning In Professional and Vocational Education*, London: Routledge
- Malcom, N.L. (2003). Constructing female and athleticism: A study of girl's recreational softball. *American Behavioral Scientist*, 46, 1387-1404.

- Mandingo, J., Holt, N., Anderson, A., and Shepperd, J. (2008). Children's motivational experiences following autonomy-supportive games lessons. *European Physical Education Review*, 14, 407-425.
- Markland, D. (1999). Internally informational versus internally controlling exercise motives and exercise enjoyment: The mediating role of self-determination. In P. Parisi, F. Pigozzi, & G. Prinzi (Eds.) *Sport Science '99 in Europe. Proceedings of the 4th Annual Congress of the European College of Sport Science*. Rome: University Institute of Motor Sciences.
- Markland, D., & Ingledew, D. K. (2007). The relationships between body mass and body image and relative autonomy for exercise among adolescent males and females. *Psychology of Sport and Exercise*, 8, 836-853.
- Markus, H. R. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology*, 35, 63 – 78.
- McCabe, M.P., and Ricciardelli, L.A. (2003a). Sociocultural influences on body image and body changes among adolescent boys and girls. *Journal of Social Psychology*, 193, 5-26.
- McCabe, M.P., and Ricciardelli, L.A. (2003b). Body image and strategies to lose weight and increase muscle among boys and girls. *Health Psychology*, 22(1), 39-46.
- McCabe, M.P., and Ricciardelli, L.A. (2004a). Body image dissatisfaction among males across the lifespan: a review of past literature. *Journal of Psychosomatic Research*, 56 (6), 675-85.
- McCabe, M.P., and Micciardelli, L.A. (2004b) Weight and shape concerns of boys and men. In J.K.Thompson (Ed.), *Handbook of Eating Disorders and Obesity*. New York: Wiley.
- McCabe, M.P., and Micciardelli, L.A (2004c). Body image dissatisfaction among males across the lifespan: A review of past literature. *Journal of psychosomatic research*, 56 (6), 675-685.

McKenzie, T.L., Sallis, J.F., Prochaska, J.J., Conway, T.L., Marshall, S.J., and Rosengard, P. (2004) Evaluation of a two-year middle school physical education intervention: M-SPAN. *Medicine and Science in Sports and Exercise*, 36 (8), 1382-1388.

Mckercher, C.M., Schmidt, M.D., Sanderson. K.A., Patton, G.C., Dwyer, T., and Venn, A.J. (2009). Physical activity and depression in young adults. *American Journal of Preventative Medicine*, 36 (2), 161-164.

Melnyk, S. E., Cash, T. F., & Janda, L. H. (2004). Body image ups and downs: Prediction of intra-individual level and variability of women's daily body image experiences. *Body Image: An International Journal of Research*, 1, 225–235.

Mendelson, B.K., and White, D.R. (1982). Relation between body esteem and self esteem of obese and normal children. *Perceptual and Motor Skills*, 54 (3), 899-905.

MIMAS, Welcome to Geoconvert (Online) 2012. (cited 2012, December)
Available from URL:<http://geoconvert.mimas.ac.uk/>

Mouratidis, A., Vansteenkiste, M., Lens, W., and Sideridis, G. (2008). The motivating role of positive feedback in sport and physical education: Evidence for a motivational model. *Journal of Sport and Exercise Psychology*, 30, 240-268.

Muscat, A. C. & Long, B. C. (2008). Critical Comments About Body Shape and Weight: Disordered Eating of Female Athletes and Sport Participants. *Journal of Applied Sport Psychology*, 20, 1-24.

National Statistics Postcode Directory (Online) (2012) (cited 2012 December);
Available from: URL: http://census.ac.uk/guides/Lookup_tables.aspx

Neumark-Sztainer, D., Goedeck, C., Story, M., and Wall, M. (2004). Associations between body satisfaction and physical activity in adolescents: Implications for programs aimed at preventing a broad spectrum of weight-related disorders. *Eating Disorders*, 12. 125-137.

Neumark-Sztainer, D., Paxton, S.J., Hannan, P.J., Stat, M., Haines, J., and Story, M. (2006). Does body satisfaction matter? Five year longitudinal associations between body satisfaction and health behaviours in adolescent males and females. *Journal of Adolescent Health*, 39, 244-251.

Neumark-Sztainer, D., Story, M., Hannan, P.J., Tharp, T., and Rex, J. (2003). Factors associated with changes in physical activity: a cohort study of inactive girls. *Archives of Pediatrics and Adolescent Medicine*, 157 (8), 803-810.

Ntoumanis, N. (2001). A self Determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225-242.

Ntoumanis, N. (2002). Motivational clusters in a sample of British physical education classes. *Psychology of Sport and Exercise*, 3, 177-194.

Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a Self Determination Theory framework. *Journal of Educational Psychology*, 97, 444-453.

Ntoumanis, N., Pensgaard, A.M., Martin, C., and Pipe, K. (2004). An idiographic analysis of amotivation in compulsory school physical education. *Journal of Sport and Exercise Psychology*, 26, 197-214.

Ntoumanis, N., & Standage, M. (2009). Morality in sport: A self-determination theory perspective. *Journal of Applied Sport Psychology*, 21, 365-380.

O'Donovan, T., and Kirk, D. (2008). Reconceptualizing student motivation in physical education: An examination of what resources are valued by pre-adolescent girls in contemporary society. *European Physical Education Review*, 14(1), 71-91.

O'Dea, J. (1994). Food habits, body image and self esteem of adolescent girls from disadvantaged and non-disadvantaged backgrounds, *Australian Journal of Nutrition and Dietetics*, 51, 74-78.

O'Dea JA, Caputi P. (2001). Association between socioeconomic status, weight, age and gender, and the body image and weight control practices of 6- to 19-year-old children and adolescents. *Health Education Research*, 16, 521-32.

Office for National Statistics (2004). Participation in sporting and cultural activities: A report. <http://www.ons.gov.uk/ons/index.html> Accessed July 2011.

Olafson, L. (2002). 'I hate phys. Ed.': Adolescent girls talk about physical education. *Physical Educator*, 59, 67-74.

Oliver, K.L. (1999). Adolescent girls' body-narratives: Learning to desire and create a "fashionable" image. *Teachers College Record*, 101(2), 220-246.

Oliver, K.L. (2001). Images of the body from popular culture: Engaging adolescent girls in critical inquiry. *Sport, Education & Society*, 6(2), 143-164.

Oliver, K. (2001). Images of the Body from Popular Culture: Engaging Adolescent Girls in Critical Inquiry. *Sport, Education and Society*. 6 (2), 143-164

Oliver, K.L., & Lalik, R. (2000). *Bodily knowledge: Learning about equity & justice with adolescent girls*. New York: Peter Long.

Oliver, K and Lalik, R (2001). *Bodily Knowledge: Learning about Equity and Justice with Adolescent Girls*. New York: Peter Lang publishing.

Oliver, K and Lalik, R (2004). Critical Inquiry on the Body in Girls' Physical Education Classes: A Critical Poststructural Perspective. *Journal of Teaching in Physical Education*, 23, 162-195.

Ommundsen, Y., and Kvalo, S.E. (2007). Autonomy-mastery, supportive or performance focused? Different teacher behaviours and pupil outcomes in physical education. *Scandinavian Journal of Educational Research*, 51, 385-413.

Owen, C.G., Nightingale, C.M., Rudnicka, A.R., Cook, D.G., Ekelund, U., and Whincup, P.H. (2009). Ethnic and gender differences in physical activity levels among 9–10-year-old children of white European, South Asian and African-

Caribbean origin: the Child Heart Health Study in England (CHASE Study). *International Journal of Epidemiology*, 38, 1082-1093.

Paffenbarger, R.S., Hyde, R.T., Wing, A.L., and Hsieh, C. (1986). Physical activity, all-cause mortality and longevity of college alumni. *New England Journal of Medicine*, 314, 605-613.

Parish, L.E., and Treasure, D.C. (2003). Physical activity and situational motivation in physical education: Influence of the motivational climate and perceived ability. *Research Quarterly for Exercise and Sport*, 74, 173-182.

Parker, A. (1996). The construction of masculinity within boys physical education. *Gender and Education*, 8 (2).

Patrick, K., Normal, G.J., Calfas, J.K., Sallis, J.F., Zabinski, M.F., Rupp, J., and Cella, J. (2004). Diet, physical activity and sedentary behaviours as risk factors for overweight in adolescence. *Achieves of Paediatric and Adolescent Medicine*, 158 (4), 385-390.

Pavelo, M. (2006). How drive for thinness moderates the influence of media on the female body. *Journal of Undergraduate Psychological Research*, 1, 22-26.

Paxton, S.J., Neumark-Sztainer, D., Hannan, P.J., and Eisenberg, M.E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self esteem in adolescent boys and girls. *Journal of Clinical Child and Adolescent Psychology*, 35(4),539-549.

Paxton, S.J., Sculthorpe, A., Gibbons, K. (1994). Weight-loss strategies and beliefs in high and low socioeconomic areas of Melbourne. *Australian and New Zealand Journal of Public Health*, 18 (4), 412-417.

Pihu, M., Hein, V., Koka, A., and Hagger, M.S. (2008). How students perceptions of teachers' autonomy supportive behaviours affect physical activity behavior: An application of the Trans-Contextual Model. *European Journal of Sports Science*, 8, 193-204.

Prusak, K.A., Treasure, D.K., Darsst, P.W., Pangrazi, R.P. (2004). The effects of choice on the motivation of adolescent girls in physical education. *Journal of Teaching in Physical Education*, 23, 19-23.

Puhse, U., & Gerber, M. (Eds.). (2005). International comparison of physical education: Concepts, problems, prospects. Oxford, UK: Meyer & Meyer

Puyau, M., Adolph, A.L., Vohra, F., and Brutte, N. (2002). Validation and calibration of physical activity monitors in children. *Obesity Research*, 10, 150-157.

Ramirez-Marrero, F., Smith, B., Sherman, W., Kirby, T., (2005). Comparison of methods to estimate physical activity and energy expenditure in African American children. *International Journal of Sports Medicine* 26, 363-371.

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, 98, 209-218.

Reilly, J., Penpraze, V., Hislop, J., Davies, G., Grant, S., Paton, J. (2008). Objective measurement of physical activity and sedentary behaviour: review with new data. *Archives of Disorders in Childhood*, 93, 64-619.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: the role of autonomy,

competence, and relatedness. *Personality and Social Psychology Bulletin*, 26, 419-435.

Richman, E. L., & Shaffer, D. R. (2000). "If you let me play sports": How might sport participation influence the self-esteem of adolescent females? *Psychology of Women Quarterly*, 24, 189-199

Riddoch, C.J., Mattocks, C., Deere, K., Saunders, J., Tilling, K., Leary, S.D., Blair, S.N., Ness, A.N. (2007). Objective measurement of levels and patterns of physical activity. *Arch Dis Chil*, 92, 963-969.

Ricciardelli, L.A., and McCabe, M.P. (2003). A longitudinal analysis of the role of biopsychosocial factors in predicting body change strategies among adolescent boys. *Sex Roles*, 48, 349-359.

Ricciardelli, L.A., McCabe, M.P., and Ridge, D. (2006). The construction of the adolescent malebody through sport. *Journal of Health Psychology*, 11, 577-587.

Ridgers, N.D., Stratton, G., Fairclough, S.J. and Twisk, J.W.R. (2007) 'Long-term effects of playground markings and physical structures on children's recess physical activity levels. *Preventive Medicine*, 44, 393-397.

Riddoch, C. & Boreham, C. (1995). The Health related physical activity of children. *Sports Medicine*, 79 (2), 86-102.

Roberts, C., Tynjaka, J., Komkov, A. (2004) Physical activity. In: Currie C, Roberts C, Morgan A, Smith R, Settertobulte W, Samdal O, Barnekow, Rasmussen V, eds. *Young people's health in context. Health Behaviour in School-Aged Children (HBSC) Study: international report from the 2001–2002 survey*. Copenhagen: World Health Organization, 90–97.

Rosenblum, G.D., and Lewis, M. (1999). The relations body image, physical attractiveness and body mass in adolescence. *Child Development*, 70 (1), 50-64.

Rowlands, A.V. (2007) Accelerometer assessment of physical activity in children: an update. *Pediatric Exercise Science*, 19, 252-266.

Rowlands, A.V. (2001) Field measures of assessing physical activity and energy balance. In: *Exercise Physiology and Kinanthropometry Laboratory Manual: Tests, Procedures and Data*. Volume 1. Anthropometry. 2nd edition. Eds. Eston, R.G. and Reilly, T. Routledge, London. 151 - 170.

Rowlands, A.V. and Eston, R.G. (2005) Comparison of accelerometer and pedometer measures of physical activity in boys and girls, aged 8-10 yrs. *Research Quarterly for Exercise and Sport*, 76, 251-257.

Rowlands, A.V., Eston, R.G. and Ingledew, D.K. (1997) Measurement of physical activity in children with particular reference to the use of heart rate and pedometry. *Sports Medicine*, 24, 258-272.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78.

Ryan, R. M., & Deci, E. L. (2007). Intrinsic and extrinsic motivation in exercise and sport. In M. S. Hagger, & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 1–19). Champaign, IL: Human Kinetics.

Ryan, S., Todorovich, T.F., Bridges, S.F., and Mokgwathi, M.M. (2009). Body shape perceptions, attitudes towards physical education and physical activity levels of middle school students. *International Journal of Fitness*, 5(2), 21-30.

Sallis, J.F. (2000). Age-related decline in physical activity: a synthesis of human and animal studies. *Medicine and Science in Sports and Exercise*. 32 (9), 1598-1600.

Sallis, J.F., and McKenzie, T.L. (1991). Physical Education's role in public health. *Research Quarterly for Exercise and Sport*, 62 (4), 124-137.

Sallis, J.F., McKenzie, T.L., Alcaraz, J.E., Kolody, B., Faucette, N., and Hovell, M.F. (1997). The effects of a 2-year physical education (SPARK) on physical activity and physical fitness in elementary school students. *American Journal of Public Health*, 87, 1328-1334.

Sallis, J.F., Prochaska, J.J., Taylor, W.C. (1999). A review of the correlates of physical activity of children and adolescents. *Medicine and Science in Sport and Exercise*, 32 (5), 963-975.

Sas-Nowosielski, K. (2008). Participation of youth in physical education from the perspective of self-determination theory. *Human Movement*, 9 (2), 134–41.

- Schilder, P. (1935) *The Image and Appearance of the Human Body*. Oxford: England.
- Schmalz, D.L., Deane, G.D., Birch, L.L., Davison, K.K. (2007). A longitudinal assessment of the links between physical activity and self-esteem in early adolescent non-hispanic females. *Journal of adolescent Health*, 41 (6), 559-565.
- Shen, B., Wingert, R.K., Li, W.D., and Rukavina, P. (2010). An amotivation model in physical education. *Journal of Teaching in Physical Education*, 29 (1), 72–84.
- Shephard. R.J., and Trudeau, F. (2000). The legacy of physical education: influences on adult lifestyle. *Pediatric Exercise Science*, 12, 34-50.
- Sierens, E., Vansteenkiste, M., Goossens, L., Soerens, B., Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, 79, 57-68.
- Sirard, J.R., and Pate, R.R. (2001). Physical activity assessment in children and adolescents. *Sports Medicine*, 31 (6), 439-454.
- Skinner, E. A., & Belmont, M. J. (1993). *Journal of Educational Psychology*, 85, 571-581.
- Smolak, L. (2004). Body image in children and adolescents: where do we go from here? *Body Image*, 1, 15-28.
- Smolak, L., Murnen, S.K., and Ruble, A.E. (2000). Female athletes and eating problems: A meta-analysis. *International Journal of Eating Disorders*, 27, 371-380.
- Spittle, M., Jackson, K., , and Casey, M.(2009). Applying self-determination theory to understandthe motivation for becoming a physical education teacher. *Teaching and Teacher Education*, 25 (1), 190–197.

- Spray, C.M., and C.K.J. Wang. 2001. Goal orientations, self-determination and pupils' discipline in physical education. *Journal of Sports Sciences*, 19, (12), 903–13.
- Stears, D. (2000). "Profiling the health-promoting school: valuing assets and evaluating the management of change", *Health Education*, 100 (2), 74 – 80.
- Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: mediating effects of dieting and negative affect. *Journal of Abnormal Psychology*, 110(1), 124–155.
- Stice, E., & Agras, W. S. (1998). Predicting onset and cessation of bulimic behaviours during adolescence: a longitudinal grouping analysis. *Behavior Therapy*, 29, 257–276.
- Stice, E., and Bearman, S.K. (2001). Body image and eating disturbances prospectively predict increase in depressive symptoms in adolescent girls: a growth curve analysis. *Developmental Psychology*, 37, 597-607.
- Stice, E., and Shaw, H.E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, 53 (5), 985-993.
- Stice, E., and Whitenton, K. (2002). Risk factors for body dissatisfaction in adolescent girls: A longitudinal investigation. *Developmental Psychology*, 38 (5), 669-678.
- Stonecipher, L.J. (1995) 'Perceived Barriers and Physical Activity: Differences in Groups Defined by Gender and Activity Level', AAHPERD National Convention
- Strong, W.B., Malina, R.M., Blimkie, C.J.R., Daniels, S.R., Dishman, R.K., Gutn, B., Hergenroeder, A.C., Must, A., Nixon, P.A., Pivarnk, J.M., Rowland, T., Trost, S., and Trudeau, F. (2005). Evidence based physical activity for school aged youth. *Journal of Pediatrics*, 146, 732-737.

- Swami, V., Steadman, L., and Tovee, M.J. (2009). A comparison of body size ideals, body dissatisfaction and media influence between female track athletes, martial arts and non-athletes. *Psychology of Sport and Exercise*, 10, 609-614.
- Taylor, M.J., and Cooper, P.J. (1992). An experimental study of the effect of mood on body size perception. *Behaviour Research and Therapy*, 30 (1), 53-58.
- Tashakkori, A., & Teddlie, Ch. (2009). Integrating Qualitative and Quantitative Approaches to Research. In Rog and Bickman (Eds.), *Handbook of Applied Social Research Methods* (2nd Edition). Thousand Oaks, CA: Sage.
- Tessier, D., Sarrazin, P., Ntoumanis, N. (2010). The effect of a intervention to improve newly qualified teachers' interpersonal style, students motivation and psychological need satisfaction in sport-base physical education. *Contemporary Educational Psychology*, 35, 242-253.
- Thompson. J.K. (2004) The (mis)measurement of body image: ten strategies to improve assessment for applied and research purposes. *Body Image*, 1, 7-14.
- Thompson, J.K., Heinberg, J.L., Altabe, M.N., Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment and treatment of body image disturbance*. Washington DC: American Psychological Society.
- Thøgersen-Ntoumani, C., & Ntoumanis, N. (2006). The role of self-determined motivation to the understanding of exercise-related behaviours, cognitions and physical self-evaluations. *Journal of Sports Sciences*, 24, 393-404.
- Thøgersen-Ntoumani, C., & Ntoumanis, N. (2007). A Self-Determination Theory approach to the study of body image concerns, self-presentation and self-perceptions in a sample of aerobic instructors. *Journal of Health Psychology*, 12, 301-315.
- Thune, I., and Furberg, A.S. (2001). Physical activity and cancer risk: dose response and cancer, all sites and site specific. *Medicine and Science in Sports and Exercise*, 33, S530-S550.

- Tiggemann, M. (2004). Body image across the adult lifespan: Stability and change. *Body Image*, 1(1), 29-41.
- Tiggeman, M., and Lynch, J.E. (2002). Body image across the lifespan in older women: The role of self objectification. *Developmental Psychology*, 37, 243-253.
- Trost, S.G., Pate, R.R., Sallis, J.F., Freedon, P.S., Taylor, W.C., Dowda, M., Sirard, J. (2002). Age and gender differences in objectively measured physical activity in youth. *Medicine and Science in Sports and Exercise*, 34, 350–355.
- Tudor-Locke ,C., Lee, S.M., Morgan, C.F., Beighle, A., and Pangrazi, R.P. (2006). Children’s pedometer-determined physical activity during the segmented school day. *Medicine and Science in Sports and Exercise*, 38. 1732–1738.
- Ullrich-French, S., and Cox, A. (2009). Using cluster analysis to examine the combinations of motivation regulations of physical education students. *Journal of Sport and Exercise Psychology*, 31 (3), 358–379.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, 29, 271-360. New York: Academic Press.
- Van Den Berg, P.A., Mond, J., Eisenberg, M., Ackard, D., and Neumark-Sztainer, D. (2010). The link between body dissatisfaction and self esteem in adolescents: Similarities across gender, age, weight status, race/ethnicity and socioeconomic status. *Journal of Adolescent Health*, 47 (3), 290-296.
- Van Den Berghe, L., Vansteenkiste, M., Cardon, G., Kirk, D., and Haerens, L. (2012). Research on self-determination in physical education: key findings and proposals for future research. *Physical Education and Sport Pedagogy*, 1-25
- Vansteekiste, M., Niemiec, C.P., and Soenens, B (2010). The development of the five mini-theories of self determination theory: An historical overview, emerging trends, and future directions. In *Advances in motivation and achievement.: The decade ahead*. Bingley, UK. Emerald Publishing.

Velija, P., and Kumar, G. (2009). GCSE Physical education and the embodiment of gender. *Sport, Education and Society*, 14 (4), 383-399.

Walters, E.E., and Kendler, K.S. (1995). Anorexia nervosa and anorexic-like syndromes in a population-based female twin sample. *The American Journal of Psychiatry*, 152 (1), 64-71.

Wang, Z. B. (2004). Influences of ethnicity and socioeconomic status on the body dissatisfaction and eating disorders of Australian children and adolescents. *Eating Behaviors*, 6, 23-33

Wang, C.K.J., and Liu, W.C. (2007). Promoting enjoyment in girls' physical education: The impact of goals, beliefs, and self-determination. *European Physical Education Review*, 13 (2), 145–164.

Wardle J, Marshland L. (1990). Adolescent concerns about weight and eating; a social-developmental perspective. *Journal of Psychosomatic Research*, 34: 377-391

Weiss, R., Dziura, J., Burgert, T.S., Tamborlane, W.V., Taksali, S.E., Yeckel, C.W., Allen, K., Lopes, M., Savoye, M., Morrison, J., Sherwin, R.S., and Caprio, S. (2004). Obesity and the metabolic syndrome in children and adolescents. *New England Medical Journal*, 350 (23), 62-74.

Welk, G.J. (2005). Principles of design and analyses for the calibration of accelerometer based activity monitors. *Medicine and Science in Sports and Exercise*, 37, S501-511.

Wetterhahn, K.A., Hanson. C., and Levy, C.E. (2002). Effect of participation in physical activity on body image of amputees. *American Journal of Physical Medicine and rehabilitation*, 81, 194-201.

Wilson, P.M., and Rodger, W.M. (2002). The Relationship Between Exercise Motives and Physical Self-Esteem in Female Exercise Participants: An Application of Self-Determination Theory. *Journal of Applied Biobehavioral Research*, 7 (1), 30-43.

Whitehead, S. & Biddle, S. (2008) Adolescent girls' perceptions of physical activity: a focus group study. *European Physical Education Review*, 14, 243-262.

Wolman, R. (1994). Osteoporosis and exercise. *British Medical Journal*, 309, 400-403.
